



This is a digital copy of a book that was preserved for generations on library shelves before it was carefully scanned by Google as part of a project to make the world's books discoverable online.

It has survived long enough for the copyright to expire and the book to enter the public domain. A public domain book is one that was never subject to copyright or whose legal copyright term has expired. Whether a book is in the public domain may vary country to country. Public domain books are our gateways to the past, representing a wealth of history, culture and knowledge that's often difficult to discover.

Marks, notations and other marginalia present in the original volume will appear in this file - a reminder of this book's long journey from the publisher to a library and finally to you.

Usage guidelines

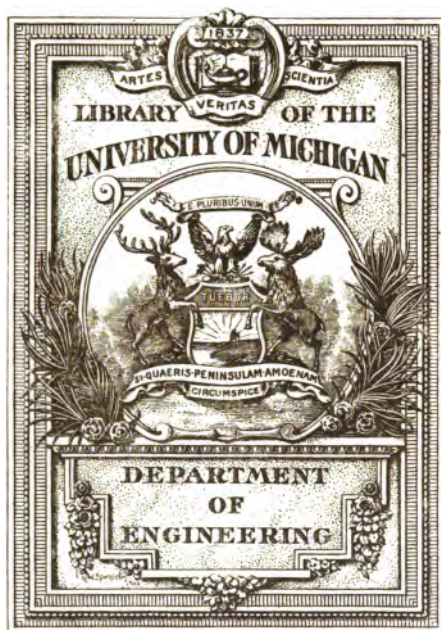
Google is proud to partner with libraries to digitize public domain materials and make them widely accessible. Public domain books belong to the public and we are merely their custodians. Nevertheless, this work is expensive, so in order to keep providing this resource, we have taken steps to prevent abuse by commercial parties, including placing technical restrictions on automated querying.

We also ask that you:

- + *Make non-commercial use of the files* We designed Google Book Search for use by individuals, and we request that you use these files for personal, non-commercial purposes.
- + *Refrain from automated querying* Do not send automated queries of any sort to Google's system: If you are conducting research on machine translation, optical character recognition or other areas where access to a large amount of text is helpful, please contact us. We encourage the use of public domain materials for these purposes and may be able to help.
- + *Maintain attribution* The Google "watermark" you see on each file is essential for informing people about this project and helping them find additional materials through Google Book Search. Please do not remove it.
- + *Keep it legal* Whatever your use, remember that you are responsible for ensuring that what you are doing is legal. Do not assume that just because we believe a book is in the public domain for users in the United States, that the work is also in the public domain for users in other countries. Whether a book is still in copyright varies from country to country, and we can't offer guidance on whether any specific use of any specific book is allowed. Please do not assume that a book's appearance in Google Book Search means it can be used in any manner anywhere in the world. Copyright infringement liability can be quite severe.

About Google Book Search

Google's mission is to organize the world's information and to make it universally accessible and useful. Google Book Search helps readers discover the world's books while helping authors and publishers reach new audiences. You can search through the full text of this book on the web at <http://books.google.com/>



Eng.
Lib.
UD
443
.M91
/912

FIELD SERVICE

By
CAPT. JAS. A. ^{revised}MOSS
24th U. S. Infantry

SECOND EDITION

(Revised and Enlarged)

PRINTED MARCH, 1912

SALES AGENTS:

The U. S. Infantry Association, Washington, D. C.
The U. S. Cavalry Association, Fort Leavenworth, Kans.
The Post Exchange, Fort Wm. McKinley, P. I.

Price \$1.25, Postpaid

PRESS OF
GEO. BANTA PUBLISHING CO
MENASHA, WIS

Copyright 1912, by Jas. A. Moss.

ORDER FOR MEYER'S MILITARY SHOP

1231 Pennsylvania Ave. N. W.

WASHINGTON, D. C.

PLEASE SHIP ME THE ARTICLES I HAVE CHECKED.

Name.....

Address.....

Ship to

(Shipment will be made to any place designated).

LIST OF ARTICLES OF FIELD EQUIPMENTS

~~Full~~ Full description of any articles will be sent on request.

How many?	ARTICLES	Price	Carry to this column prices of articles desired
	Acetylene Lamp No. 1	1.00	
	Acetylene Lamp No. 2	2.00	
	Basin, folding canvas, capacity 1 gallon, weight 7 oz...	3.50	
	Bath Tub, canvas	4.50	
	Bath tub, rubber	\$ 5.00	
	Bedding roll (U. S. Army pattern)	9.00	
	Boots, rubber, medium weight, elastic tops to reach to the waist weight 3¾ lbs.	5.00	
	Bromo-Seltzer, headaches and sea-sickness	7.00	
	.....	.10	
	.....	.25	
	.....	.50	
	Buckets, folding canvas, capacity 3 gallons, weight 8 oz. ....	.50	
	Duplex folding canvas buckets with steel frame, capacity ten quarts, weight 1½ lbs.	1.50	
	Camphenol, an excellent antiseptic for dressing cuts and wounds .....	.10	
	Camp Chair, folding Gold Medal make, weight six lbs.	1.50	
	Camp Stool .....	.35	
	Camp Table, gold medal folding duplex, size folded 3 x 5 x 7, weight 18 lbs.	3.30	
	Candlesticks, folding, per set	1.00	
	Camp Combination—canvas, can be used for a sleeping bag, camp bed, mattress, blanket or hammock, 12 oz., Army duck	6.00	
	Cascarets, for Constipation, six tablets .....	.10	
	Candles, for folding lanterns, per dozen .....	.20	
	Clothes hanger, made of steel wire, has five hooks ....	.35	
	Clothing roll (U. S. Army pattern)	4.00	
	Comb .....	.25	
	Compass, No. 1	1.25	
	Compass, No. 2	1.50	
	Compass, No. 3	1.50	
	Cot, Gold Medal folding Army Standard, weight 17 lbs.	3.50	
	Cot, Gold Medal, with mosquito bar frame and mosquito bar	6.25	
	Cot, Steinfeld, Telescope, weight 1d lbs.	3.35	
	Dispatch case	8.00	
	Duffle bag (for prices, see page 161)		
	Field Glasses	15.00	
	Flask, Whiskey, metal	4.50	
	Folding camp table	3.30	
	"Shur-Foot" folding camp table	2.00	
	Fountain Pen, Boston non-leakable, can be carried in any pocket, in any position and will not leak..	2.50	
	Gauze, sterilized, one yard .....	.15	
	Hair Brush, small size	1.50	
	Hatchet, safety guard	1.50	
	Housewife, containing scissors, safety pins, toilet pins, needles, threads, buttons, etc. ....	.75	
	Ink, put up in wooden tube .....	.25	
	Lamp, electric pocket lamp, weight, 7 oz.	1.25	
	Lantern, folding to be used with candles, aluminum, weight 9 oz.,	2.25	
	Tin, weight 16 oz.	1.50	
	Listerine, per bottle .....	.25	

How many?	ARTICLES	Price	Carry to this column prices of articles desired
	Amount brought forward		
	Map Case, leather	2.80	
	Match Case, waterproof metal .....	.50	
	Mattress, made of high grade rubber with removable and washable slip, size 6' 3 x 3, weight 11 lbs...	27.00	
	Medicine Case, containing six vials, weight 7 oz.	1.15	
	Case fitted with 5 vials, scissors, tweezers, ointment pot, plaster, bandages, absorbent cotton, court plaster, silk, needle and safety pins, weight 23 oz.	8.00	
	Mirror, weight 7½ oz., slips in morocco case	1.25	
	Mosquito Bar, per pair .....	.75	
	Head Net, made of fine English netting and worn com- fortable with any wide brim hat, weight 2½ oz. ....	.75	
	Night Cap, wool, knitted, covering head and neck com- pletely with the exception of the eyes, weight 5 oz.	1.50	
	Note Book, leather cover	1.50	
	Rubber Overshoes, send size of shoes	1.50	
	Pad, scratch .....	.10	
	Pencil, indelible .....	.10	
	Pencil, lead with rubber end .....	.05	
	Pencil, one end red and the other end blue .....	.10	
	Pillow, air pillow, size 11 x 16, khaki cover, weight ¾ lbs.	2.75	
	Pistol, automatic, calibre 45, weight 33 1-3 oz.	22.00	
	Ammunition, per 100	2.50	
	Pills, opium, one grain per dozen .....	.10	
	Plaster, zinc oxide, one yard, ½" wide .....	.10	
	One yard, 1" wide .....	.15	
	Pocket Knife, combination knife, two blades, cork- screw, screw-driver, wire extra, weight 7 oz.	6.00	
	Poncho, federal cloth, weight about 4 lbs.	5.00	
	Preston Mess Kit	6.00	
	Oil Stove, one burner, weight about 4 lbs.	3.75	
	Same fitted in case with a can for alcohol, size 9 x 9 x 5½	5.00	
	Rope, ¼" thick, 20' long, made of the finest flax, will not kink or twist, very light in weight	1.65	
	Safety Ax	1.50	
	Safety Pins, large, each .....	.05	
	Small size, per dozen .....	.20	
	Sal Hepatica .....	.25	
	Shipping Tags, per dozen .....	.10	
	Shirts, olive drab regulation coat style, all wool.	3.00	
	Khaki color summer shirts	1.00	
	Shoe laces, tan, per pair .....	.05	
	Sleeping hood	1.50	
	Slicker, federal make	7.50	
	Soap, bath Colgate's .....	.10	
	Soap, toilet, Pears' .....	.25	
	Soap Box, metal .....	.50	
	Socks (Dutch)	1.50	
	Sodium, for hives and itching of the skin, ½ lb. ....	.15	
	Sponge, small .....	.25	
	Large	1.00	
	Squibb's Mixture, per ounce .....	.10	
	Talcum Powder .....	.25	
	Thermos Bottle, pints	2.50	
	Quarts	3.50	
	Toilet Case, fine to hang in the tent, holds brush, soap, comb, etc., rubber lined, satin cover, each	2.00	
	Toilet Paper, per package .....	.10	
	Trunk locker	7.00	
	Wall pockets	1.50	
	Wash basin, No. 1	1.00	
	Wash basin, No. 2 .....	.50	
	Washstand (rubber folding)	1.00	
	Watch, Ingersoll	1.00	
	Ingersoll	1.50	
	Ingersoll	2.00	
	Watch Bracelet .....	.50	
	Water pail, No. 1	1.00	
	Water pail, No. 2 .....	.75	
	Web tent clothes hanger .....	.50	
	Whisk Broom .....	.50	

Total, \$.....

101517
m.

TABLE OF CONTENTS.

CHAPTER I

EQUIPMENT AND PERSONAL EFFECTS OF OFFICERS

General Considerations—General Rules and Principles—Normal Division of an Officers' Field Equipment—Articles Carried on Person—Articles Carried in Bedding Roll—Articles Carried in Clothing Roll—Articles Carried Separately—Transportation of Field Allowance of Baggage as Excess Baggage.

CHAPTER II

EQUIPMENT AND PERSONAL EFFECTS OF ENLISTED MEN

Clothing—Arms and Equipment—Rations—Intrenching Tools.

CHAPTER III

A COMPANY TAKING THE FIELD

Personal Equipment of the Enlisted Men—Field Quartermaster and Commissary Tentage—Rations—Forage—Ammunition—Medicines for Animals—Equipage—Field Desk and Contents—Medicines for Men—Maps—Disposal of Sick and Prisoners—Officers' Mess—Officers' Mess Chest—Special Field Return—Care of Property Left Behind.

CHAPTER IV

LOADING WAGONS

General Principles—Location of Various Articles.

CHAPTER V

TRANSPORTATION AND CARING FOR MEANS OF TRANSPORTATION

Wagon Transportation—Railroad Transportation—Preparation of Cars—Loading and Entraining—Conduct of the Troops—Detraining and Unloading—Loading Animals on Cars—Loading Ambulances on Cars—Loading Wagons on Cars—Loading property in Cars—Parking Trains—Care of Animals, Wagons, and Harness in the Field.

CHAPTER VI

MARCHES

Troops on the March Protected by Means of Advance Guards, Flanking Parties and Rear Guards—General Rules for the Conduct of Marches.

CHAPTER VII

CAMPING

Forms and Dimensions of Camps—Contents of Shelter Tent Roll, Pitching Tents and Inspection of Shelter Tent Camp—Camps Protected By Means of Outposts—Location of Camps—Making Camp—Construction of Sinks, Kitchens, Kitchen Pits, Incineration Pits and Bunks—Wood—Water—Policing of Camp.

315382

CHAPTER VIII CAMP EXPEDIENTS

How to Improve Lamps, Candlesticks, Knives, Forks, Spoons and Cups—How to Fry and Boil without Utensils—How to Heat a Tent without a Stove—How to Sleep warm, etc.

CHAPTER IX INDIVIDUAL COOKING

How To Cook With Only The Mess Kit—Recipes.

CHAPTER X FIELD COOKING

In Permanent Camp—In Temporary Camp—On the March—Sample Bill of Fare for Ten Days—Field Cooking Expedients—Fireless Cooker—Messing on Railroad Trains.

CHAPTER XI FIELD BAKING AND FIELD BAKERY EQUIPMENT

System Used—Field Baking Expedients—Preparation and Preservation of Yeasts.

CHAPTER XII CARE OF THE HEALTH AND FIRST AID TO THE SICK AND INJURED

These subjects are covered in a simple and exhaustive manner.

CHAPTER XIII RIFLE TRENCHES

Their Construction and Use—Obstacles.

CHAPTER XIV MISCELLANEOUS

Weights of Articles usually Taken into the Field—Weights, Dimensions and Capacities of Tents—Heating Tents—Weights of Rations—Capacities of Wagons and Pack Animals—Dimensions and Capacities of Railroad Cars—Allowance of Water—Ration of Forage.

INDEX

A	
Acetylene lamp	6
Acre, size of	58
Allowance of—	
Tentage and baggage	12
Water	151
Ambulances, loading of, on cars	45
Ammunition—	
Enlisted men	20
Officers	4
Animals—	
Care of	48
Loading of, on cars	41 & 44
Pack	150
Arms and equipments—	
Enlisted men	20
Officers	4 & 13
Articles of War	53
Ax	56

B	
Baggage—	
Field allowance of.....)	12
Transportation of excess }	
Baking, field	108
Basin	6
Bath tub	6
Bedding roll—	
Articles to be carried in.....	5
Obtainable from Q. M. D....	3
Bill of fare for ten days	91
Bite of animals, treatment for ..	125
Blankets	5
Blanks to be taken in field—	
Commissary	27
Company	29
Quartermaster	26
Bleeding, how checked	125
Bread, field	106
Bruises, how treated	126
Bucket	6
Bunks, field, construction of ..	67
Burning clothes, how to handle ..	127
Burns, treatment of	126

C	
Cage, swinging	84
Camps—	
Forms and dimensions	55
How to make	62
How to police	68
Shelter	59
Camp expedients	69
Camp kitchens	64 & 94
Camp chairs and tables	11
Candlestick	8
Canteen—	
Cost	4
How carried	16
Care of—	
Animals	48
Feet	123
Harness	50
Health	119
Wagons	49

Cars, capacity of	150
Chairs, camp	11
Chiggers	127
Chills	128
Choking	127
Cleaning harness	50
Clothes hanger	6
Clothing roll—	
Articles to be carried in....	7
Illustration	9
Obtainable from Q. M. D....	3
Coffee, liquid	26
Colds	128
Company taking field	25
Compass—	
By whom carried, Note 2....	13 & 14
Kind and price	3
Cooking—	
Field	83
Individual	76
Cooking expedients	94
Cooling water	72 & 95
Constipation	128
Convulsions	128
Cot	6
Cramps	128

D	
Dental surgeons not required to	
have pistol, ammunition,	
compass and field glass....	14
Detraining	43
Diarrhoea	128
Dislocation	128
Dispatch cases	5
Drowning	129
Drunkenness	130

E	
Ear, foreign body in	130
Earache	131
Enlisted men—	
Arms and equipment	20
Service uniform	24
Entraining	40
Expedients—	
Camp	69
Cooking	94
Field baking	112
Equipment—	
Enlisted men	20
Officers	1 & 13
Eyes, inflamed	131
Eye, foreign body in	131

F	
Fainting	129
Famishing	132
Fatigue, excessive	132
Feet, care of	123
Feet, how to keep warm,	
(top page)	72
Fever	132
Field allowance of tentage and	
baggage	12

INDEX

Field baking	108
Field baking expedients	112
Field bread	106
Field cooking	83
Field cooking expedients	94
Field desk	29
Field fortifications	140
Field glasses—	
By whom carried, Note 2....	13 & 14
Cost and kind	3
How carried	16
Field kit—	
Cavalry	22
Infantry	20
Field mess chest	85
Field ovens	96, 108, 115, 111 & 113
Field ranges	90
Field Quartermaster & Commis-	
sary	25
Filters	67 & 97
Fireless cookers	98
First aid packet	4 & 16
First aid to sick and injured	124
Folding chairs	152 & 153
Folding lantern	6
Folding table	152 & 153
Forage, ration of	151
Fork—	
Cost	4
How carried	18
Fortifications	140
Freezing	132
Fuel, daily allowance of	25
H	
Harness, care of	50
Hatchet	6
Haversack—	
Cost	4
How carried	16
Health, care of	119
Horse equipments	4
Housewife	8
I	
Ice box, improvised	85
Identification tag—	
Cost	4
How worn	16
Improvised field ovens	96
Improvised ice box	86
Incineration pits	65
Incinerator	87
Individual cooking	76
Insect stings	132
Insignia on—	
Collar of shirt	17
Shoulder loop	17
Sweater	18
Intrinchments	140
Intrrenching tools	21
Ivy poison	132
K	
Kitchens, camp	64
Kitchen cars	26 & 102
Kitchen pits	65

Knife, eating—	*
Cost	4
How carried	18
Knife, pocket	4

L

Lamp, acetylene	6
Lantern, folding	6
Lightning, struck by	133
Liquid coffee	26
Loading—	
Ambulances on cars	45
Animals on cars	44
Cars	40
Property in cars	46
Wagons	36
Wagons on cars	45

M

Making camp	62
Map case	4
Map of country	4
Marches	52
Match case	8
Matches	6
Means of transportation	39
Meat can—	
Cost	4
How carried	18
Medical officers not required to	
have pistol, ammunition,	
compass and field glass—	14
Medicines	31
Medicine case	8
Mess, officers'	33
Mess chest, field, company	85
Mess outfit	11
Messing on railroad trains	101
Money	4
Mosquito bar	7

N

Nose, foreign body in	133
Nose bleed	133
Note book	3

O

Officers—	
Arms and equipments	1 & 13
Mess	11 & 33
Oil stove	11
Outposts	61
Ovens, field	96, 111, 115, 108, 113

P

Pack animals	150
Pack transportation	89
Packing trains	47
Pencils	3
Piles	133
Pintsch gas cooker	103
Pistol—	
Cost	4
How carried	18
Pit for slops	86

INDEX

Pits, (kitchen & incineration) ..	65
Pocket knife	4
Poisons	133
Poncho	7
Poultices	134
Property, loading of, in cars...	46

R

Railroad cars, capacity of	150
Railroad trains, messing on	101
Railroad transportation	39
Rations, weights of	150
Rations of field kit	20
Ration of forage	151
Recipes—	
Individual cookery	78
Yeast	116

S

Saber—	
Cost	4
How carried	18
Saddle	4
Salves	134
Service kit	21
Service uniform—	
Enlisted men	24
Officers	15
Shelter tent camp	59
Shock, treatment for	134
Sinks, construction of	63
Sleep, how to sleep warm.....	7 & 71
Slicker	7
Snake bite	135
Snow or sun blindness	135
Socks (Dutch)	7
Sore throat	135
Sprains	135
Spoon—	
Cost	4
How carried	18
Starving	132
Stings by insects	132
Stools, camp	11
Stove, oil	11
Stunning, treatment for	136
Sun dial	70
Sunstroke	136
Surplus kit	21
Sweater—	
Excellent to sleep in	7

To be used in field instead of	
coat	19
Swinging cage	84

T

Table camp	11
Tent, how to heat without stove	70
Tentage, field allowance of....	12
Tents—weights, dimensions and	
capacity of	149
Thirst	136
Tin cup—	
Cost	4
How carried	19
Toothache	136
Transportation and caring for	
means of transportation ..	39
Transportation, pack	89
Traveling by rail	26
Trench, baking in	114
Trunk locker	2

U

Uniform, service—	
Enlisted men	24
Officers	15
Unloading cars	43

W

Wagons—	
Capacities of	150
Care of	49
Loading of	36
Loading of, on cars	45
Wagon transportation	39
Wall pockets	8
Warm, how to sleep, see "Sweat-	
er,"	7 & 41
Watch	4
Water—	
Allowance of	151
Filtering and sterilizing	67
How to cool	72 & 95
Weights of—	
Articles taken into field	147
Rations	150
Tents	149
Wind, to determine direction of	71
Wood	67
Wounds	136

Y

Yeast recipes	116
---------------------	-----

FIELD SERVICE

CHAPTER I

EQUIPMENT AND PERSONAL EFFECTS OF OFFICERS

General Considerations. Just what and how much should be taken into the field in the way of equipment and personal effects depends upon the kind and amount of transportation available, the nature and probable duration of service, climatic conditions and other considerations. For example, if in permanent or temporary camp, with lots of transportation available, it is possible to have camp tables, camp chairs, oil stoves, cots and other conveniences that would be entirely out of the question if on the march, with limited transportation.

General Rules and Principles. The following general rules and principles are basic in nature:

1. While, on the one hand, one should not take into the field any unnecessary plunder, he should, on the other hand, always make himself as comfortable as possible, thus husbanding his nervous energy and physical strength. There is no sense in a man's subjecting himself to personal discomfort that can be avoided. Experience has shown that to undergo avoidable hardships does not enable one to stand unavoidable ones any better. Always make yourself as comfortable as the amount of transportation available, the nature of the service and other considerations, will permit, making use of various camp expedients.

2. Never, unless absolutely unavoidable, should you get separated even temporarily from your field equipment.

3. Every officer should have a complete field equipment, the articles of bedding and toilet forming a permanent part thereof and not being gathered together every time one is ordered into the field. This equipment should always be packed and ready for instant use. Not only does this insure the certainty of the officer having his equipment complete when he takes the field, especially if ordered out un-

expectedly, but it also enables him to attend better to other matters that always require attention at such a time.⁽¹⁾

4. Upon returning from field service, the equipment should always be given a thorough overhauling, being cleaned and sunned, the various articles being checked up and all that are worn or exhausted replaced *at once*.

(A list of the articles belonging in the bedding roll should be pasted in some appropriate place on the interior of the roll. The same should be done in the case of the clothing roll and the trunk locker, thus facilitating the checking).

Normal Division of An Officer's Equipment. In campaigns, an officer's field equipment may in a general way be normally divided into five parts: 1, The articles carried on his person; 2, The articles carried in his bedding roll; 3, The articles carried in his clothing roll; 4, His mess outfit; 5, The articles carried separately.

Under existing orders, an officer's personal baggage, except while actually in permanent or maneuver camp, must, in the absence of special authority to increase the baggage allowance, be carried in his bedding and clothing rolls and must be limited to the amount stated on page 12 ⁽²⁾. In permanent or maneuver camps, an officer's personal baggage may be kept in a steamer trunk or trunk locker, conforming to this description:

3-ply veneer covered with vulcanized fiber, 32 inches by 19 inches by 13 inches over all. Handles to be of leather, and all hinges, locks and handles to be as flat as possible, so as not to interfere with proper packing in wagons. The weight when packed must not exceed 100 lbs. Any suitable equivalent, such as a telescope or leather trunk, conforming to the prescribed dimensions and weight and free from projecting parts is authorized. (G. O. 201, 1905).

⁽¹⁾All officers will provide themselves with the uniforms, arms and personal and horse equipments pertaining to their rank and duty and maintain them thoroughly neat and serviceable. Commanding officers will inspect and verify the arms, service uniforms and equipments of officers and enlisted men as often as they may deem necessary to assure themselves that all members of their commands are prepared to take the field upon short notice fully equipped and informed.—*Uniform Regulations*, 1911.

⁽²⁾Neither G. O. 201, '05, prescribing how an officer's field personal baggage shall be packed, nor G. O. 133, '07, prescribing an officer's field allowance of personal baggage, makes any difference between service in camp and service on the march. However, Sec. 231, Field Service Regulations, prescribes "*whether in peace or war, without special orders in regard to baggage, personal baggage carried in the field trains is the normal allowance and will consist of * * * * 2. The bedding and clothing rolls of officers.*" From this it is inferred that the use of the locker is allowed only in permanent or maneuver camp.

EQUIPMENT AND PERSONAL EFFECTS OF OFFICERS 3

The trunk locker issued to enlisted men conforms substantially to the prescribed box and its use is authorized by officers (Cir. 42, 1906). It may be purchased from the Quartermaster's Department for \$3.94. It weighs about thirty-one pounds.

The bedding and clothing rolls adopted by the War Department (Cir. 22, 1909) may be purchased by Regular Army officers directly from the Depot Quartermaster, 26th Street and Gray's Ferry Road, Philadelphia, Pa. Bedding Roll, \$6.28; Clothing Roll, \$3.12.

Militia officers wishing to purchase bedding rolls, clothing rolls, trunk lockers, or any other quartermaster or ordnance articles, must do so through the Adjutant General of their State, who, under the provisions of Section 17 of the Militia Law, will purchase them from the War Department for the State and in turn sell them to the officer. If in a hurry, the delivery of the articles may be expedited by requesting the Adjutant General of the State to wire for the articles and request shipment to the officer direct, by express.

1. ARTICLES CARRIED ON THE PERSON:

(a) *Required by the Uniform Regulations.*

Personal Equipment (Dismounted Officers):

Compass. See page 156. (Some field glass cases have small compasses on the top. The cases of the Goerz Army Binocular and of the field glasses Type "A" and "B," purchasable from the Signal Corps are of this type).

Field Glass.⁽¹⁾ (The Special Model Goerz Army Binocular of eight power magnification, manufactured by the C. P. Goerz American Optical Co., 317 East 34th St., New York, is an excellent prismatic glass, being especially constructed for hard field service. The great luminosity of this glass enables one to see in the early morning and in the evening when the light is too faint to use the ordinary field glass. Having a very large field, it is easy to hold steady. Carrying case thereto is fitted with a compass).

Note Book.

Pencils.

⁽¹⁾Field glasses can be purchased from the Signal Corps at these prices: Type "A," $3\frac{1}{2}$ and $5\frac{1}{2}$ power, day and night, \$14.75; "B," $4\frac{1}{2}$ and $6\frac{1}{2}$ power, day and night, \$17.50; Type "C," 10-power prism glass (Terlux), \$39.00; Type "D," 8-power prism glass (Busch) \$27.00. Application for purchase should be made to the Chief Signal Officer of the Army, Washington, D. C., and should include post office money order or check for the amount. In the Philippines, application will be made to the Chief Signal Officer of the Division.

The field glasses issued to organizations are not for the personal use of officers and will not be used in lieu of the officer's personal field glasses.—*Uniform Regulations.*

CHAPTER I

Watch (*).

Canteen
Fork
Haversack
Knife
Meat Can
Spoon
Tin Cup

May be purchased from the Ordnance Department at these prices: Canteen, Inf., 60 cents—Cav., 75 cents; fork, 5 cents; haversack, complete, model 1908, \$1.45; knife, 12 cents; meat can, tin, 30 cents—aluminum, 57 cents; spoon, 4 cents; cup, tin, 14 cents—aluminum 22 cents. (Authority for purchase of arms by officers, from Ordnance Department contained in A. R. 1542 and 1543).

Officers serving with troops may draw the articles just enumerated from stores belonging to the command with which they are serving. (A. R. 1544).

ARMS:

Pistol
Ammunition
Saber

May be purchased from the Ordnance Department at these prices; Automatic Pistol, Cal., 45, model 1911, about \$14.75—holster for same, about \$1.75—ammunition \$20.48 per 1000; Saber, \$13.65—saber belt \$3—saber knot \$2.50.

An officer serving with troops may draw a pistol and ammunition from the stores belonging to the command with which he is serving. (A. R. 1544).

First Aid Packet.

Identification Tag. (To be worn whenever equipped for field service. Can be purchased from the Q. M. Dept., for 1 ct.)

(b) *Not required by regulations, but should be carried.*

Map of country.

Money. (The amount depending upon circumstances. If you have a bank account, take along a few blank checks.)

Pocket Knife. (A good combination Knife is recommended).

Map Case. (See page 158).

FOR MOUNTED OFFICER:

Required by the Uniform Regulations.

Same as above, except leave out haversack and add—

HORSE EQUIPMENTS:

Saddle (Complete, McClellan \$22.40); saddle blanket (\$4.35);

(*) A small watch, worn on the wrist with a leather bracelet, is recommended. A good leather bracelet can be purchased from almost any leather or military dealer for about \$2.

EQUIPMENT AND PERSONAL EFFECTS OF OFFICERS 5

saddle cloth (without insignia, \$4.60); bridle, double (\$9.70); halter (\$3.70); nose-bag (\$1.25); saddle-bags (\$7.65); lariat and strap (\$0.92); picket pin (\$0.41); currycomb, (\$0.30); horse brush (\$1.30); surcingle (\$1.00); horse cover (\$5; blanket lined, \$10.10).

PERSONAL EQUIPMENTS:

Spurs and straps (\$1.80).

The articles above enumerated can be purchased from the Ordnance Department at the prices stated.

Officers *below the grade of major* required to be mounted, whether serving with troops or not, will be furnished with horse equipments by the Ordnance Department (A. R. 1542).

Officers promoted to the rank of major may retain their horse equipment issued to them under A. R. 1542, pending the report of the Cavalry Equipment Board.

Staff officers and inspector-instructors of the Organized Militia, and those acting as such, will, when the nature of their duty requires it, carry a dispatch case to be furnished by the Ordnance Department. Dispatch cases will be furnished inspector-instructors on requisition and will be accounted for as other articles of ordnance property that are supplied to those officers; they will be furnished other officers on memorandum receipt.

(Note: The dispatch may be purchased from the Ordnance department for \$6.20).

Medical officers will not be required to provide themselves with field glasses, pistol, or ammunition.

Mounted chaplains will be equipped as staff officers, but without arms.

2. ARTICLES CARRIED IN THE BEDDING ROLL.

(Roll to be plainly marked with name, rank and regiment of owner)

Blankets. (Required by the Uniform Regulations). Suggestion: Two olive drab blankets (can be gotten from the Q. M. D. at \$4.29 for heavy weight and about \$2.80 for light weight), or one blanket and one comforter.

The list that follows is given as an *aide-memoire*, the articles to be taken along depending upon personal taste and various conditions. It is not expected that any officer would, even under the most favor-

able conditions, equip himself with all the articles named, but the list is given as a guide for all tastes and conditions.

Bath tub, rubber or canvas. (Not necessary at camps where there are shower baths). See page 154.

Basin, tin, canvas or rubber,—preferably canvas or rubber. See page 155. (A canvas basin can be gotten from the Depot Quartermaster, Philadelphia, Pa., for 30 cts.).

Boots, rubber. (A light pair that can be easily rolled up in bedding roll).

Bucket, rubber or canvas. (Not necessary if G. I. buckets are obtainable in camp). See page 155. (A canvas bucket can be gotten from the Depot Quartermaster, Philadelphia, Pa., for \$1.15).

Chocolate. (Because of its great nutritive power it is an excellent thing to take into the field).

Clothes hanger, which can be attached to tent pole. See page 161.

Cot. (A Gold Medal cot can be purchased from the Depot Q. M., at Philadelphia, Pa., or St. Louis, Mo., for \$2.62. On account of its weight, 21 lbs., this cot is necessarily excluded from the equipment of a junior officer, if the prescribed normal campaign allowance of baggage is adhered to. When folded the cot is 39 inches long. See page 157. The Steinfeld Telescope Cot Bed is well spoken of by some officers. Manufactured by Steinfeld Bros., 620 Broadway, New York. Price, \$3.00, Weight, 15 lbs., Length when folded, 34 inches. See page 157.

Emergency Ration. (It is a good plan always to have in your kit one emergency ration).

Hatchet. (A small camp hatchet is very convenient. The Marble Safety Pocket Ax, price, \$1.50, is recommended. See page 160).

Lamp, acetylene. (A small acetylene lamp is a great convenience in camp. The Columbia Watchman's Lamp [Pinkerton Model], manufactured by the Hine-Watt Mfg. Co., 16 East Randolph St., Chicago, Ill., is recommended. Price, \$3.50 with dark lantern shutter, \$4.50. See page 159).

Lantern, folding. (Very Convenient. Not necessary if one has an acetylene lamp. See page 159).

Matting or canvas. (A piece about 3 x 6 feet. A great convenience to have on the ground beside the cot).

Mattress. (A light mattress. It is understood that the Infantry Equipment Board has suggested a sleeping pad 75 inches long, 28 inches wide and 1 inch thick).

EQUIPMENT AND PERSONAL EFFECTS OF 7 OFFICERS

Mosquito bar or head net. (Should by all means be taken along if there is any probability of mosquitoes. See page 157).

Nails. (A few nails are often useful).

Nightcap. See "Sweater."

Overcoat. (If one has a slicker and a sweater, an overcoat is hardly necessary).

Overshoes, rubber.

Pillow.

Pillow case, colored.

Poncho—for dismounted officers. (May be purchased from the Philadelphia Q. M. Depot for \$4.58. The new model will be ready the latter part of 1911).

Reading material.

Rope. (About 12 feet of $\frac{1}{4}$ inch rope to be tied lengthwise of tent, about a foot below the ridge pole, on which to hang clothes).

Shoes. (One extra pair).

Shoe laces. (A couple of extra pair).

Slicker—for mounted officer. (May be purchased from the Philadelphia Q. M. Depot, for \$4.56. The new model will be ready the latter part of 1911).

Slippers. (A great convenience and comfort in camp).

Socks. ("Dutch" or other heavy woolen. Can be obtained for \$1.50. Read remark after "Sweater").

Sweater. (In cold weather, it is most important both for comfort and health that the extremities be kept warm at night. A sweater with high rolling collar, a pair of heavy woolen socks and a woolen knitted nightcap, are excellent for this purpose, being the equivalent of two or three blankets).

Tobacco.

Twine. (A small ball of good strong twine is often useful).

3. ARTICLES TO BE CARRIED IN THE CLOTHING ROLL.

(Roll to be plainly marked with name, rank, and regiment of owner.)

The list that follows is given as an *aide-memoire*, the articles to be taken along depending upon personal taste and various conditions. It is not expected that any officer would, even under the most favorable conditions, equip himself with all the articles named, but the list is given as a guide to persons of different tastes.

Breeches. 1 extra pair.

Candles. (Lantern candles from the Subsistence Department. Not necessary, if one has an acetylene lamp).

Candlestick. (See page 157).

Cards, playing.

Coat. 1 extra.

Cold cream. (If winter, fine for chapped lips, etc.)

Comb and brush.



OFFICER'S CLOTHING ROLL READY FOR TRANSPORTATION AS A HANDBAG
OR IN THE BEDDING ROLL.

Diary. (Some officers make it a rule always to keep a diary while in the field. It is very convenient to refer to afterwards as to the dates of various happenings).

Drawers.

Handkerchiefs.

Housewife. (Obtainable from the Subsistence Department for 38 cents. Contains scissors, safety pins, needles, pins, thread and buttons. See page 162).

Leggins, 1 extra pair.

Listerine.

Matches.

Match case, waterproof. See page 156.

Medicine. (A pocket medicine case containing the usual remedies for constipation, cramps, diarrhoea, etc. Can be obtained from almost any large drug store. In the absence of such a case, take along a bottle of sal hepatica or a box of Cascarets, for constipation; a bottle of Squibb's Mixture for cramps; opium pills for diarrhoea; a bottle of



OFFICER'S CLOTHING ROLL HUNG ON TENT POLE, AFFORDING READY ACCESS TO ARTICLES IT CONTAINS.

bromo-seltzer for nervous headaches. Take along by all means a roll of zinc oxide plaster for abraisons, cuts, blisters, etc.; also a roll of sterilized guaze dressing. Sodium hyposulphate—"Hypo" is excellent for chigers. Bacon fat is also good for this purpose, also tobacco juice; salt water and kerosene may be used. Take along a bottle of "Camphenol," an excellent antiseptic—fine for sore throat).

Mirror, hand.

Pajamas, or night shirt.

Razor.

Razor strop.

Safety pins, large. (In addition to those in housewife. Large safety pins are exceptionally useful in camp).

Scissors.

Shaving soap, stick. (Or shaving cream or shaving powder).

Shaving brush.

Shirt, olive-drab. 1 extra.

Soap, laundry.

Soap, toilet.

Soap box.

Socks.

Sponge. (To be carried in oil silk bag. Wash rags are preferred by some).

Stationery.	{	Blotter,
		Envelopes, official and plain.
		Fountain pen.
		Ink. (Waterman's Ideal Ink, put up in wooden tube with screw top, is most convenient for field use. Price, 25 cents).
		Pad, scratch
		Paper.
		Pencils, indelible; pencil with one end red and other end blue.
		Shipping tags.
		Stamps or stamped envelopes.

Talcum powder. (Also good for sore feet).

Thermos bottle. (Convenient for carrying cold and hot beverages).

EQUIPMENT AND PERSONAL EFFECTS OF 11 OFFICERS

Toilet case. (Leather or cloth. Very convenient for carrying and keeping together the hair brush, comb, tooth powder and other toilet articles).

Toilet paper.

Tooth Brush.

Tooth powder or paste.

Towels, bath.

Towels, hand.

Undershirts.

Wall Pockets. (Made of cloth, with pockets for towels, handkerchiefs and other articles. Convenient to hang on wall of tent or suspend from rope extending between upright poles. See page 162).

Whisk broom.

Whiskey or brandy (if desired).

The clothing roll may be carried in the bedding roll or separately. Should the transportation be so limited as to prohibit the use of the bedding roll, a blanket or two, with the necessary clothing and toilet articles may be packed in the clothing roll, and the bedding roll with the surplus articles left behind.

4. THE MESS OUTFIT.

What and how much to be taken along as a mess outfit depends upon so many different conditions that it is almost impossible to give lists covering all cases. For instance, if an officer intends to mess with the company, having his meals cooked in the company kitchen and served with a few extras in his tent, his mess outfit would be very different from what it would be if he were going to run a mess of his own. See "Officers' Mess," page 33.

5. ARTICLES CARRIED SEPARATELY.

Table	}	See pages 152 and 153.
Chairs		

Oil Stove. (Can be purchased from the Jeffersonville Depot, Indiana, for \$3.70).

Every article should be plainly marked with name, rank and regiment of owner.

The regular folding camp tables and chairs may be carried in the bedding roll.

FIELD ALLOWANCE OF TENTAGE AND BAGGAGE.
(Par. 231, Field Service Regulations).

	When carried in field trains (a) and no allowance is specified in orders (normal campaign allowance)		In permanent or maneuver camps.	
	Wall tents, quarters, and offices	Personal baggage	Wall tent, quarters, offices	Personal baggage
Colonel	1	300	2	400
Lieut. Colonel, Major	1	200	2	400
Captain		100	1	200
Lieutenant		75	1 (for 2)	150
For every 3 company officers or fraction thereof	1			
For every 2 staff officers or fraction thereof, below grade of major	1			
For each authorized headquarters mess.				
Battalion	1	300	2	350
Regiment	1	350	2	400

(a) In campaign this allowance may be increased only by the general commanding in the field; in time of peace, by the officer ordering the troops into the field, but in no case will the allowance authorized for permanent camps, as published in War Department orders, be exceeded.

Transportation of Field Allowance as Excess Baggage. In case of field service, an officer may, under the provisions of A. R. 1138, have the Quartermaster's Department transport his field allowance as excess baggage upon certification that it is necessary for his field allowance of baggage to accompany him in addition to the amount carried by his ticket.

Form of Certificate.

(To be furnished the Quartermaster).

Madison Barracks, N. Y.

January 1, 1911.

I certify that it is necessary for my field allowance of baggage to accompany me in addition to the amount carried on my ticket from Madison Barracks, N. Y., to Washington, D. C., to which place I am ordered per Par. 1, S. O. No. 1, War Department, 1911.^(*)

JOHN A. SMITH,

Captain, 24th Infantry.

^(*)If the order should not be a War Department one, then a copy thereof should accompany this certificate.

EQUIPMENT AND PERSONAL EFFECTS OF OFFICERS 13

Upon receipt of the officer's certificate, the Quartermaster will furnish him with a transportation request covering the allowance of excess baggage to which he is entitled.

EXTRACTS FROM THE UNIFORM REGULATIONS.

List of Arms and Equipments to be in Possession of Officers.

(Note. Everything not affecting field service has been omitted).

For the purpose of inspection the whole equipment may be required.

General, Lieutenant General, and Chief of Staff.—Such as they may desire.

All other officers.—

Dismounted Officers.

A.

Arms.—Saber, pistol, and ammunition.

B.

Personal equipment—

- | | |
|---|--|
| 1. Bedding roll (canvas). ¹ | 12. Meat can. |
| 2. Blanket. | 13. Note book. |
| 3. Canteen, with strap. | 14. Pencils. |
| 4. Clothing roll (canvas). ¹ | 15. Pistol belt. |
| 5. Compass. ² | 16. Pistol holster. |
| 6. Field glass. ² | 17. Pistol lanyard. |
| 7. First-aid packet. | 18. Spoon. |
| 8. Fork. | 19. Tin cup. |
| 9. Haversack. | 20. Watch. |
| 10. Identification tag. | 21. Whistle, by all company officers and battalion commanders of infantry. |
| 11. Knife. | |

Mounted Officers.

Arms.—Same as A, except that the articles mentioned are not prescribed for chaplains.

¹ The bedding roll adopted by the Quartermaster's Department or any other canvas roll may be used as a combination bedding-clothing roll.

² Field glasses and compasses, by officers serving with troops and all others when their duties may require their use. For exceptions, in case of medical officers and chaplains, see middle of next page.

Medical officers and dental surgeons will not be required to provide themselves with pistols and ammunition, but they may carry same when necessary for personal protection.

Personal equipment.—Same as B, omitting "9. Haversack," and adding—

1. Dispatch case, by staff officers, and those acting as such, whose duty may require them to use a dispatch case.
2. Saber belt (service).
3. Saber knot (service).
4. Saber scabbard.
5. Saber straps (russet leather).
6. Spurs (with russet leather straps).

Chaplains will not be required to provide themselves with compass, field glasses, pistol belt, saber belt, and saber knot.

Medical officers and dental surgeons will not be required to provide themselves with field glass, compass, and pistol, but medical officers on duty with sanitary units in the field will carry field glass and compass.

Horse equipments—

- | | |
|--|-----------------------|
| 1. Bridle, curb. | 8. Lariat strap. |
| 2. Bridle, watering (or a combination curb-watering bridle). | 9. Nosebag. |
| 3. Currycomb. | 10. Picket pin. |
| 4. Halter, complete. | 11. Saddle, complete. |
| 5. Horse brush. | 12. Saddlebags. |
| 6. Horse cover. | 13. Saddle blanket. |
| 7. Lariat. | 14. Saddlecloth. |
| | 15. Surcingle. |

NOTES.

1. For articles that officers may draw from the Ordnance Department for their official use, see A. R. 1544.

2. Officers below the grade of major, required to be mounted, will be furnished with horse equipments by the Ordnance Department. (A. R., 1542).

EQUIPMENT AND PERSONAL EFFECTS OF 15 OFFICERS

SERVICE UNIFORM AND EQUIPMENT

Occasions.	By whom	Articles.
For field duty.....	{ All officers, acting dental surgeons, and veterinarians.	<p style="text-align: center;">A.</p> <p><i>When dismounted:</i></p> <ol style="list-style-type: none"> 1. Service hat, with hat cord sewed on (peaked, 4 indentations). 2. Olive-drab shirt. 3. Service coat (the sweater, as soon as issued by the Quartermaster's Department, will take the place of the service coat for field duty). 4. Service breeches. 5. Russet-leather shoes (high). 6. Russet leather, pigskin, or canvas leggings, or wollen puttees. 7. Ribbons, by those entitled thereto (if coat is worn). 8. Olive-drab woolen gloves, when prescribed (optional when not on duty). 9. Identification tag. 10. Haversack (containing meat can, knife, fork, and spoon). 11. Canteen (with canteen cover). 12. Tin cup. 13. First aid packet (with pouch). 14. Watch. 15. Notebook and pencils. See "C," page following. <p style="text-align: center;">B.</p> <p><i>When mounted:</i> Same as A, omitting "8 Olive-drab woolen gloves," etc., and "10, Haversack (containing meat can, etc.)," and adding:</p> <ol style="list-style-type: none"> 1. Regulation riding gloves. 2. Spurs. 3. Saddle. 4. Halter. 5. Bridle. 6. Saddle blanket. 7. Saddlecloth. 8. Saddlebags (containing meat can, knife, fork, and spoon). 9. Surcingle. 10. Nosebag. 11. Horse brush. 12. Currycomb. 13. Lariat. 14. Picket pin. See "D," page following.

SERVICE UNIFORM AND EQUIPMENT—Continued

Occasions.	By whom	Articles.
For field duty....	{ All officers except officers of the Medical Department and chaplains.	<p>C.</p> <p><i>When dismounted:</i> Add to A, preceding page: 1. Pistol (with holster, lanyard, and 20 rounds of ammunition) 2. Pistol belt (to be worn over the coat). 3. Field glass, { See footnote 2, 4. Compass. } p. 13. NOTE.—Company officers and battalion commanders of infantry will carry whistles. For dispatch cases, "Personal equipment". p. 14.</p> <p>D.</p> <p><i>When mounted:</i> Add to B. 1. Pistol (with holster, lanyard, and 20 rounds of ammunition) 2. Pistol belt (to be worn over the coat). 3. Field glass. { See footnote 2, 4. Compass. } page 13. NOTE.—Medical officers on duty with the sanitary units of the mobile army will carry field glasses and compass.</p>

NOTE.—Veterinarians when in the field will carry pistols and ammunition.

Canteen.—When dismounted, the canteen will be worn on the right buttock; when mounted, it will be fastened to the off cantle ring.

Currycomb and Horse brush will be carried in the off-side saddle pocket.

Field Glasses will be carried on the right side, the strap passing over the left shoulder.

First-aid Packet.—The first-aid packet will be worn in front of the right hip. Enlisted men wearing the field belt will carry it under the second pocket, to the right of the belt fastener.

Haversack.—When dismounted, the haversack will be worn on the left side, the strap, in case of officers, passing over the right shoulder; when mounted, saddlebags will be carried instead.

Identification Tag.—When equipped for field duty the identification tag will be worn under the shirt, suspended from a cord around the neck.

EQUIPMENT AND PERSONAL EFFECTS OF 17 OFFICERS

Insignia on Collar of Shirt.—(When the shirt is worn without the coat). The insignia of rank worn on the collar of the shirt will be of metal and will be worn as follows:

Major general.—The centers of the two stars, point up, $1\frac{3}{4}$ inches apart, in middle of collar, one star being one-half inch from the end of the collar.

Brigadier general.—Star in middle of collar, point up, 1 inch from end of collar.

Colonel.—Eagle, head up, beak to the front, in middle of collar, tip of wing one-half inch from end of collar.

Lieutenant colonel.—Oak leaf, point up, in middle of collar, 1 inch from end of collar.

Major.—Oak leaf to be worn same as oak leaf of lieutenant colonel.

Captain.—The two bars, one-fourth inch apart, in middle of collar, parallel to end of collar, and 1 inch from it.

First lieutenant.—The bar, in middle of collar, parallel to the end of collar, and 1 inch from it.

Second lieutenant.—Bronze insignia of arm of service, in middle of collar, and 1 inch from end of it.

Chaplains.—The Latin cross, in middle of collar, longer limb parallel to end of collar, and 1 inch from it.

Insignia on Shoulder Loop.—On the shoulder loops of the service uniform metal insignia of rank will be worn as follows:

Major general.—The centers of the two stars, point up, $2\frac{3}{4}$ inches apart, the stars to be equidistant from the ends of the loop.

Brigadier general.—Star in center of loop, point up.

Colonel.—Eagle, head up, beak to the front, in middle of loop, talons of eagle five-eighths inch from sleeve end of loop.

Lieutenant colonel.—Oak leaf, point up, in middle of loop, stem of leaf five-eighths inch from sleeve end of loop.

Major.—Oak leaf to be worn same as oak leaf of lieutenant colonel.

Captain.—The two bars, one-fourth inch apart, in middle of loop, lower bar parallel to and five-eighths inch from sleeve end of loop.

First lieutenant.—The bar in middle of loop, parallel to and five-eighths inch from sleeve end of loop.

Chaplains will wear the Latin cross instead of the insignia of rank; to be in middle of loop, foot of cross five-eighths inch from sleeve end of loop.

Insignia on Sweater.

(a) When the sweater is worn by officers, the insignia of rank will be worn on the collar of the shirt, the collar of the shirt being worn over that of the sweater.

(b) The insignia of rank of noncommissioned officers will be worn on the sleeve of the sweater.

Meat can, knife, fork, and spoon.—When dismounted they will be carried in the haversack; when mounted, in the near-side saddle bag.

Nosebag will be carried by officers on off-side of the cantle. When, because of being separated from means of transportation or for any other reason, the blanket is carried on the saddle as prescribed in the Cavalry Drill Regulations for enlisted men, the nosebag will inclose the end of blanket roll on off-side of the cantle.

Picket pin, with lariat neatly coiled, will be fastened to the near cantle ring.

Pistol.—In the field the pistol instead of the saber will be worn by dismounted officers and dismounted noncommissioned staff officers. The pistol will be worn on the right hip. The pistol belt will be worn outside the coat or overcoat.

Saber.

(a) In the field dismounted officers and dismounted noncommissioned staff officers will wear the pistol instead of the saber.

(b) When dismounted, the saber will be habitually worn guard to the rear, with the scabbard hooked. When worn with the overcoat, the belt will be inside and the saber outside the overcoat. When mounted, the scabbard will be worn attached to the near side of the saddle by saber straps passing through the pommel ring and the quarter ring of the saddle.

Shirts.

(a) **Olive drab.**—The commanding officer may, when he considers it advisable, on account of climatic or other conditions, prescribe the wearing of the olive-drab shirt without the coat at certain drills and without the sweater when in the field. A belt will then be worn instead of suspenders. When the shirt is so worn, elastic or other arm bands will not be worn.

(b) When the olive-drab shirt is worn without the coat or sweater, except when the coat or sweater is only temporarily removed, the

EQUIPMENT AND PERSONAL EFFECTS OF 19 OFFICERS

insignia of rank will be worn on the collar by officers, and the chevrons will be worn on the sleeves of the shirt by noncommissioned officers.

(c) The olive-drab shirt will be worn with the service uniform in the field.

Tin cup.—When dismounted, it will be carried in the haversack; when mounted, it will be secured to the canteen strap.

Sweater.—The sweater, as soon as issued by the Quartermaster's Department, will be worn by troops of the mobile army *in the field only*, when the weather is too cold to admit of the use of the flannel shirt alone. The collar of the shirt will be worn over that of the sweater.

Service coats will be packed and taken along by troops going into permanent or maneuver camps and issued on arrival. When troops are to take the field at other times, and, in the opinion of the commanding officer, conditions are likely to arise that will make the wearing of service coats desirable, he will order the coats of the enlisted men packed, and they may then or subsequently be sent forward and issued, being repacked when necessary.

When service coats are on hand, individual soldiers when out of camp will not wear the sweater as an outer garment, except by permission of the commanding officer in particular cases.

On the march and in other military formations officers will wear the sweater when the enlisted men do.

Sweaters will form a part of the surplus kit.

CHAPTER II

EQUIPMENT AND PERSONAL EFFECTS OF ENLISTED MEN⁽¹⁾

Infantry. The *field kit* for enlisted men of infantry, in addition to the clothing worn on the person, is composed of the following articles:

CLOTHING, ETC.

1 blanket.	1 stockings, pair.
1 comb.	1 tooth brush.
1 poncho, rubber.	1 towel.
1 soap, cake.	

ARMS AND EQUIPMENTS.

1 U. S. magazine rifle, cal. 30.	1 set blanket-roll straps.
1 bayonet.	1 haversack.
1 bayonet scabbard.	1 meat can.
1 gun sling.	1 cup.
1 rifle cartridge belt and fastener.	1 knife.
1 pair cartridge-belt suspenders.	1 fork.
1 first-aid packet (Med. Dept.)	1 spoon.
1 pouch for first-aid packet.	1 shelter tent, half (Qm. Dept.)
1 canteen.	1 shelter tent pole (Qm. Dept.)
1 canteen strap.	5 shelter tent pins (Qm. Dept.)

AMMUNITION

90 rounds ball cartridges, caliber .30.

RATIONS.

2 field rations, reduced (bacon, hard bread, coffee, sugar, pepper and salt).	1 iron ration (emergency ration).
---	-----------------------------------

⁽¹⁾This chapter is based upon G. O. 23, 1906, as modified by G. O. 147, 1911.

EQUIPMENT AND PERSONAL EFFECTS OF 21 ENLISTED MEN

Intrenching Tools. The following intrenching tools form a part of the field equipment of every company:

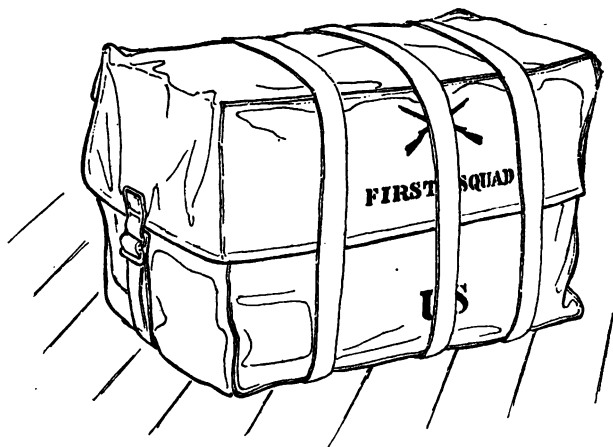
Two-foot folding rule (1 per Co.)	Shovel, intrenching (3 per squad.)
Hand axe (4 per Co.)	Wire cutter (3 per Co.)
Pick mattock (1 per squad.)	

The two-foot rule, hand axes, and wire cutters are constant per company and are carried by the sergeants and musicians. The pick mattocks and intrenching shovels are carried alternately by the members of the squads.

The *field kit*, which is carried on the person, is supplemented by the *surplus kit*, the two together making up the *service kit*. The surplus kit consists of—

1 drawers, pair.	2 stockings, pairs.
1 shoes, marching, pair.	1 shoe laces, extra pair.
1 undershirt.	1 sweater.

Surplus kit bags will be issued to each organization at the rate of one to each squad, one for the sergeants and one for the cooks and musicians (or trumpeters).¹ In the kit bag for the cooks and mu-



⁽¹⁾Until the surplus kit bag has been issued to organizations the barrack bag may be used as heretofore.

sicians may be carried a barber's kit, weighing not to exceed eight (8) pounds.

Each bag will be marked with the letter of the company and the number of the regiment, as provided in paragraph 295, Army Regulations, for haversacks, and the proper designation of the squads to which the bags belong, both markings to be in center of front cover flap, as shown in the illustration on the preceding page.

The kit bag for the sergeants and that for the cooks and musicians (or trumpeters) will be marked "Sergeants," "Cooks and Musicians" (or Trumpeters), respectively.

The kit of each man will be packed as follows:

Stockings to be rolled tightly, one pair in the toe of each shoe; shoes placed together, heels at opposite ends, soles outward, wrapped tightly in underwear, and bundle securely tied around the middle by the extra pair of shoe laces, each bundle to be tagged with the company number of the owner. These individual kits will be packed in the surplus kit bag in two layers of four kits each, the sweaters to be neatly folded and packed on the top and sides of the layers, the jointed cleaning rod and case, provided for each squad, being attached by the thongs on the inside of the bag. The housewife provided for each squad will also be packed in the surplus kit bag.

In garrison these surplus kit bags, packed as described above, will be stored habitually in the store room of the organization, access to their contents for purposes of substitution being permitted under proper supervision at stated intervals.

In the field the squad leader will be held responsible for the condition of the squad surplus kit bag and will supervise packing and unpacking. When not on the wagon the bag will be kept habitually at the squad leader's tent.

When in time of war or field training weather conditions do not require the infantry to wear overcoats, they are to be packed in boxes properly marked, one box for each two squads, and left under charge of the Quartermaster's Department at the nearest convenient station to be brought up when needed.

Cavalry. The *field kit* for cavalry, in addition to the clothing worn on the person, is composed of the following articles:

EQUIPMENT AND PERSONAL EFFECTS OF ENLISTED MEN 23

CLOTHING, ETC.

The same as for infantry and including the overcoat.

ARMS AND EQUIPMENTS

Arms and equipments of all enlisted men of cavalry (except trumpeters and members of bands):

1 U. S. magazine rifle, cal. 30.	1 cavalry saber and scabbard.
1 pistol.	1 gun sling.
1 rifle cartridge belt and fastener	2 spurs.
and loop for saber attachment.	2 spur straps.
1 pair rifle cartridge-belt suspenders.	2 saber straps.
1 first-aid packet (Med. Dept.)	1 rifle scabbard.
1 pouch for first-aid packet.	1 meat can.
1 saber knot.	1 cup.
1 fore and 1 hind shoe fitted.	1 knife.
12 horseshoe nails, pointed.	1 fork.
1 pistol holster.	1 spoon.
1 pistol lanyard.	1 shelter tent, half (Qm. Dept.)
1 canteen.	1 shelter tent pole (Qm. Dept.)
1 canteen strap.	5 shelter tent pins (Qm. Dept.)

AMMUNITION

80 rounds ball cartridges, cal. .30 24 rounds pistol ball cartridges.

RATIONS

The same as for infantry.

The saddle to be packed as prescribed in paragraph 289, Cavalry Drill Regulations. The surplus kit is the same as for the infantry and is carried on the horse or in the troop wagons, according to the circumstances of service.

CHAPTER II

SERVICE UNIFORM

Occasions.	All enlisted men	Articles.
For field duty.	When dismounted.	<p>A.</p> <ol style="list-style-type: none"> 1. Service hat, with hat cord sewed on (peaked, 4 indentations). 2. Olive-drab shirt. 3. Service coat. (The sweater, as soon as issued by the Quartermaster's Department, will take the place of the service coat for field duty). 4. Service breeches. 5. Marching shoes. 6. Leggings. 7. Identification tag. 8. Brassards, by those entitled to wear them. 9. Ribbons by those entitled thereto. (Ribbons will not be worn on the sweater or olive-drab shirt). 10. Olive-drab woolen gloves, when prescribed (optional when not on duty). 11. Field belt. <p>B.</p> <ol style="list-style-type: none"> 1. Same as A, omitting "10, Olive-drab woolen gloves," and adding: 2. Regulation riding gloves, when prescribed. 3. Spurs.
	When mounted.	

NOTE.—With dismounted service-uniform, in the field, noncommissioned staff officers will carry the pistol instead of the saber.

CHAPTER III

A COMPANY TAKING THE FIELD

In time of peace, under ordinary circumstances, a company commander receiving orders to take the field with only his company, should at once make the following preparations regarding rations, transportation, equipage, blanks in field desk, etc.⁽¹⁾

Personal Equipment of the Enlisted Men

Have the first sergeant inform the men as to what equipment they are to take, and cause them to pack up the rest. The men should be informed as to what they will carry on their persons and what they will send by wagon or rail.

Field Quartermaster and Commissary

If necessary, designate one of the lieutenants to act as quartermaster and commissary. If wood and forage are to be purchased and other expenses incurred, the necessary arrangements as to blanks, etc., must be made.

If checks are to be issued, then a check book must also be carried.

In addition to the above a memorandum book should be carried in which each voucher as to amount of purchases, cost, services, etc., should be entered—also the actual issues and expenditures made daily—in fact, a journal of all transactions which will require reports to be made.

Allowance of fuel per day for 100 men:

Hard wood, 2 cd. ft. 3 in.

Soft wood, 3 cd. ft. 11 in.

All vouchers for rent for camping ground must state time the ground is occupied (for example, from 1 to 4 July, 1903).

⁽¹⁾The order directing a company commander to take the field usually specifies the number of rations, amount and kind of tentage, the number of rounds of ammunition to be carried by the men and to be carried by transportation, and the transportation to be furnished. The order should also show the destination, time of departure, probable duration of absence and the nature of the duty to be performed.

If more than one month's field service is expected, the Quartermaster should carry the following blanks:

- Form 1. Report of persons and articles hired.
- Form 1a. Report of transportation issued.
- Form 6. Account current.
- Form 8. Abstract A (Purch.).
- Form 10. Purchase voucher.
- Form 11. Abstract B (Services).
- Form 13. Service voucher.
- Form 17. Transportation request.
- Form 31. Report of Purchases (Cover to 27D red).
- Form 38. Req. fuel, forage and straw.
- Form 78. B-L rail.
- Form 87. Official telegram.

Kitchen Cars

In movements by rail of a command consisting of 30 or more men, when special train service is provided, and the time required for the journey will exceed 48 hours, the Quartermaster's Department, when practicable, furnishes kitchen tourist cars at the rate of one for each 200 men or fraction thereof, and also arranges for a sufficient number of tables. This kitchen car is in charge of a mess officer designated by the commanding officer. (See G. O. 218, '09; also, G. O. 34, '10).

An Expedient Way of Making Coffee

In case troops traveling by rail are not provided with a kitchen car, piping hot coffee of an excellent quality may be furnished the command in this manner: Let the Commissary take along the proper amount of ground coffee; put about two inches of the coffee into an ordinary G. I. bucket or camp kettle; add sugar, and then pour in enough cold water to dampen the mixture. It is not at all necessary, but the coffee may be in a loose sack; or, a piece of cheese cloth may be tied loosely over the top of the kettle. When the train stops about meal time, at a water tank or station, a detail of soldiers, assembled on a forward platform, rush out to the locomotive and, from the injector exhaust in the cab, or from the boiler exhaust-hole below, steam is turned into the kettles.

Liquid Coffee

However, when enlisted men supplied with cooked or travel rations travel under command of an officer, and a kitchen car is not

furnished, the officer in command, or some other officer designated to act as commissary, obtains from the post commissary funds at the rate of 21 cents per man per day for the anticipated number of days, for the purchase of liquid coffee. The funds are invoiced on Form 11, Sub. Dept., and receipted for on the same numbered blank. (A. R. 1229).

Persons from whom liquid coffee is purchased sign the "Liquid Coffee Account" (Form 10 Sub. Dept.) as a receipt. At the end of the journey the commissary accounts on Form 10 Sub. Dept., for the funds received, expended and transferred. (See A. R. 1229). The commissary also gets from the issuing commissary a certificate, Form 27, Sub. Dept., showing the date to which the command has been rationed.

Transportation

Ascertain what transportation you will have. If wagon, have it report to you as early as practicable for your personal inspection, at which the post quartermaster should be present. If rail or water transportation is to be furnished, obtain the necessary transportation requests from the quartermaster and the liquid coffee money from the commissary.

The cars should be inspected before the troops embark and also after they disembark, and their condition noted.

For field allowance of transportation and the amount of supplies to be carried, see "Manual for Quartermasters Serving in the Field."

Tentage

If the order does not state the amount and kind of tentage to be taken, get this information from the adjutant. If conical or wall tents are to be taken, they should be pitched and inspected as soon as drawn from the quartermaster.

The tent pins should be carried in a box or in sacks and not in the tents.

A tent fly or a paulin (with upright and ridge poles) should be carried for shelter over the kitchen.

Rations

Ascertain how many days' rations you are to take and then consult the first sergeant, the quartermaster sergeant and the cooks as to what articles of the ration are to be taken. If there is sufficient transportation, soft bread should be taken for the first two days.

The rations should be drawn and taken to the company as soon as practicable, so as to be on hand in ample time to be loaded when the transportation reports. The quartermaster sergeant should be charged with this.

If, before returning, rations are to be drawn from some other commissary, do not fail to get your ration certificate (Form 27, Sub. Dept.), from the post commissary.

Forage

The amount of forage should be cut down to the lowest necessary amount. As a rule teamsters and quartermasters want to load up with extra forage.

Ammunition

If the order does not state how much ammunition is to be taken, ascertain the amount from the adjutant.

Medicines for Animals

A supply of the veterinary medicines commonly used for colic, burns, etc.

Equipage

Consult the first sergeant and the quartermaster sergeant about the matter. Generally the following articles would answer for a company of 65 men:

- 1 field range, or two buzzacotts.
- 8 camp kettles.
- 8 mess pans.
- 1 pot rack.
- 6 buckets, G. I.
- 3 lanterns. (If you can get them, 1 for each tent.)
- 6 axes and 6 extra helves.
- 6 camp hatchets and 4 extra helves.

(The axes and hatchets should be provided with leather covers that protect the edges and also prevent damage to other articles with which they may be packed.)

- 4 picks and 1 extra helve.
 - 3 shovels, S. H.
 - 2 spades.
 - 1 Sibley stove and pipe to every tent in winter.
- The following articles should also be carried:
- Some $\frac{1}{2}$ -inch and $\frac{1}{4}$ -inch rope.

A saw.

Ratchet brace and assorted bits (including a screw-driver bit).

A file.

Lanterns.

One ball twine.

Rivets.

An assortment of 6, 10, 20 and 60 penny nails.

A spring balance which will weigh about 200 lbs. is an excellent thing to carry along—can be used in verifying weights of beef, forage, stores, etc., preventing disputes that usually arise from “guessing” at weights.

Field Desk

Have the company clerk pack the field desk, which should always contain these articles:

- 1 Army Regulations, Field Service Regulations, and Drill Regulations.
- 2 Manual for Courts-Martial and Manual of Guard Duty.
- 3 Quartermaster's Manual.
- 4 Field Morning Report.
- 5 Descriptive Lists, Military Records, and Statements of Accounts (with latest clothing order.)
- 6 Sick Report.
- 7 Duty Roster.
- 8 Property Book.
- 9 Memorandum Book for data for muster and pay rolls.
- 10 General Orders and Circulars, War Dept., since publication of last Army Regulations.
- 11 Muster Rolls.
- 12 Descriptive Lists.
- 13 Certificate of Disability for Discharge.
- 14 Inventory of Effects of Deceased Soldiers.
- 15 Special Descriptive List of Deserters.
- 16 Record of Previous Convictions, Summary Court.
- 17 Statement of Service.
- 18 Company Return.
- 19 Return of Casualties in action (to be taken only in case of expected action).
- 20 Special Field Return.

- 21 Furloughs.
- 22 Discharge (honorable and without honor).
- 23 Final Statements.
- 24 Ration Returns.
- 25 List of Soldier's Allotments.
- 26 Soldier's Allotments to be Discontinued and to Expire
- 27 Pay Rolls.
- 28 Survey Blanks.
- 29 Inventory and Inspection Reports.
- 30 Mucilage.
- 31 Envelopes.
- 32 Rubber erasers.
- 33 Ink eraser.
- 34 Pins and paper fasteners.
- 35 Tape.
- 36 Ink (red and black), pens, penholders and pencils.
- 37 Sealing wax.
- 38 Blotting paper.
- 39 Rubber bands.
- 40 Ruler.
- 41 Paper pads—plain and also carbon-duplicating.
- 42 One or two blank books.
- 43 Letter paper and legal cap paper.
- 44 Candles.
- 45 Matches.

The correspondence book may be kept in a memorandum book and transferred to the permanent records upon return to post. What other books and blanks are to be carried will depend upon what reports and returns may be required, the probable duration of the field service and other circumstances. If, for instance, the company is to be out from May 1 to July 15, several men are to be discharged and reenlisted; telegrams are likely to be sent and transportation requests issued; and an ordnance return to be submitted, then the following additional articles are to be carried:

- 1 Official telegram blanks.
- 2 Transportation Requests.
- 3 Railroad Guide.
- 4 Descriptive and Assignment Cards.

- 5 Enlistment papers.
- 6 Special Tri-monthly Report, recruiting service.
- 7 Physical Examination of Recruits.
- 8 Statement of Charges. (Q. M. D.)
- 9 Return of Ordnance and Ordnance Stores (with retained copy of last return).
- 10 Receipt—Invoice for Transfer of Ordnance Property in the Field.
- 11 Abstract of Expenditures (Ordnance).
- 12 Statement of Charges (Ordnance).
- 13 Addressed Penalty Envelopes for Return of Ordnance Stores.

NOTE. The only periodical reports or returns made by an officer in command of a *detachment* on detached service, are the muster rolls (Feb. 28, Apr. 31, June 30, Aug. 31, Oct. 31, and Dec. 31) and the pay rolls (monthly). No other reports or returns are rendered unless required by special instructions.

Medicines

If no surgeon is to accompany the command the following medicines should be taken along, the directions being plainly marked on each package:

Medicines	Doses	Use
Magnesium sulphate	1 oz.	Brisk cathartic
Compound cathartic pills	1 to 3 pills	Cathartic
Castor oil	$\frac{1}{2}$ to 1 oz.	Bland cathartic; used in diarrhea, etc.
Camphor and opium pills	1 to 2 pills	For diarrhea and dysentery
Squibb's Mixture	30 to 90 drops	Intestinal colic and diarrhea
Bismuth powders	10 to 30 grains	Indigestion and diarrhea
Aromatic spirits of ammonia	30 to 60 drops	Stimulant to the heart; used in heat exhaustion
Whiskey	$\frac{1}{2}$ to 1 oz.	Stimulant

Potassium chlorate	Saturated solution (All that water will dissolve)	As a gargle for sore throats
Tincture of iodine	Paint over surface	For inflammations, con- tusions, bruises, etc., where the skin is not broken
Brown Mixture	1 to 2 teaspoonfuls	Bronchitis
Quinine sulphate tab- lets (3 grains)	1 to 4 tablets	For colds, malarial fever tonics, etc.
Copaiba pills	1 to 3 pills	Gonorrhea and other inflammations of the urinary tract, also sub-acute and chron- ic-bronchitis
Carbolized vaseline	Emollient	Dressings in sores and skin affections
Ammonia or soap lini- ment	External use	Sprains, bruises, etc.
Morphine sulphate	$\frac{1}{2}$ to $\frac{3}{4}$ grains	To relieve pain
Potassium bromide	10 to 15 grains	To quiet the system and produce sleep
Pepsin	10 to 30 grains	Indigestion
Mustard plaster	External use	Counter-irritant
Powdered Ipecac	30 grains	To produce vomiting in case of poisoning
Mint tablets	1 to 2 tablets	Sour stomach
Sodium salicylate	1 to 3 tablets	Rheumatism
Phenacetin	3 to 5 grains	For headache and fev- ers. Combined with salol for influenza

Dressings: Sublimated gauze, bandages, first-aid packets, absorbent and safety, splints, iodoform, adhesive plaster and pins (common), cotton, cotton batting.

Funds

Take along the company fund check book and about \$50 in cash from the company fund.

Maps

If possible, take along a map of the country to be traversed.

Sick and Prisoners¹

Make arrangements about leaving behind the sick and general prisoners. In the cavalry and artillery provision must be made for the horses, if any, to be left behind.

Sometimes men to be discharged while the troops are on a practice march and who do not intend to reenlist, are left at the post.

The descriptive lists of all men remaining at the post, including those in the hospital, must be left with the proper officers.

Officers' Mess

What an officer should take along in the way of a mess outfit will, of course, depend entirely upon circumstances. If, for instance, he were going into permanent camp and intended to run a mess of his own, his mess outfit would be very different from what it would be if he were going into the field without any wagon transportation. Under normal conditions, if the captain were going to run a company officers' mess he would detail a soldier to cook for the mess and designate one of the lieutenants to run the mess. The officer in charge should get a supply of subsistence stores and arrange for the necessary messing outfit, including table, camp chairs, etc. See, "The Mess Outfit," page 11.

¹ In the field the construction of sinks, chopping of wood, hauling of water, etc., are usually done by prisoners, when there are any. Each company sends the necessary guard to get prisoners and to guard them while with the company.

CHAPTER III

OFFICERS' MESS CHEST.

(Designed by Capt. Robert Alexander, U. S. A.)
 (Chest to be plainly marked with name, rank and regiment of owner)
 All measurements given are interior.



(Depth of tray, not including thickness of bottom, 3 3/8 ins.)



(Made of white pine, 3/4 inch thick. Partitions 3/8 inch thick. Corners reinforced—handles at ends—Yale padlock and key—exterior painted gray.)

CONTENTS.

(Agate Ware.)

2 Baking pans (two sizes, so that one will fit into the other.)

1 Can opener.

6 Cans, with screw tops (cans in which Lowney's commissary candy comes).

1 Corkscrew.

1 Coffee pot (small).

6 Cups, with handles (3 ins. deep; 3 3/8 ins. diam.)

6 Cups, without handles (conical shape, 3 3/8 ins. high; 2 3/8 ins. diam. at top).

8 Forks, table.

1 Fork, iron, long.

1 Frying Pan.

1 Gridiron, wire.

1 Knife, meat.

(Continued following page.)

CONTENTS.

(Agate Ware—Continued.)

- 8 Knives, table.
- 1 Meat cleaver.
- 1 Pepper box.
- 1 Pitcher, small.
- 6 Plates (8½ ins. diam.)
- 6 Plates (7 ins. diam.)
- 1 Platter (14 x 11 ins.)
- 1 Platter (12 x 8½ ins.)
- 6 Ramekin dishes (5½ ins. diam.; 1 in. deep).
- 1 Saltseller.
- 6 Soup bowls (5½ ins. diam.; 2½ ins. deep).
- 1 Soup ladle.
- 1 Spoon, iron, long.
- 10 Spoons, large.
- 8 Spoons, small.
- 3 Vegetable dishes (three sizes so that they will fit into one another).

NOTE. A camp kettle, a mess pan or two, a table cloth and a dozen napkins should also be taken along.

Special Field Return

Submit the Field Return as required by Army Regulations.

Care of Property to be Left Behind

A reliable noncommissioned officer and one or two reliable privates should be left behind to look after the barracks and the property not taken along. A company order should be issued making one of them responsible for all the property, and arrangements should be made about their mess during the absence of the company. As many articles of personal property as possible that are to be left behind are packed in the lockers, everything surplus being plainly marked with the owner's name and then packed in clothing boxes.

Mattresses, pillows, sheets, pillowcases, lamps, etc., should be turned in to the quartermaster or left stored in the company quarters depending upon the probable length of field service. All surplus ordnance should be carefully packed and locked or sealed.

The company quarters and premises should be policed, the windows fastened, the doors locked and the keys turned over to the person to be in charge of the quarters.

CHAPTER IV

LOADING WAGONS

The property to be loaded should be carefully inspected before any is loaded, to see that everything is in good order and properly boxed, crated or tied.

Large heavy boxes should be avoided.

The following general rules must be observed:

1 Heavy stuff must go on the bottom (and forward rather than rear) and light stuff on top—thus, heavy articles will not crush light ones and the centre of gravity will be nearer the axles, making the turning over of the load more difficult.

2 Things needed first upon reaching camp must be placed on top or in rear.

The following method of loading a wagon is in accordance with the general principles cited above:

Ammunition. Ordinarily just back of the forward axle. In case of possible need, however, the ammunition should be placed where it could be gotten at immediately.

Axes, Spades, Shovels, and (Unhandled) Picks. Should be outside of wagonbed, in leather pockets or strong bags, or stood on end at rear of wagon. They should not be placed between the sides of the wagon and the load.

Blanket Rolls. If to be carried on wagon, they should be rolled tightly and left straight—not tied in a circle—and loaded on top, crosswise.

Camp Kettles and Buckets. Under the wagon, suspended from the reach pole.

Field Desk. To be placed on or near bottom and well forward, as it is seldom required early.

Field Range.—On bottom, at rear of wagon. (The Infantry Equipment Board has recommended that the field range be carried on tail gate of the wagon, lowered to a position of about 30 degrees from the horizontal).

Forage. If to be carried on wagon, in front of ammunition.

Lashing. Use two pieces of $\frac{3}{4}$ -inch rope about 75 feet long, passing over load first from front to rear diagonally, and finally secured by being tied to rings on the rear bolster standards—never to the end gate rods. The rope should be passed through strong hooks securely clinched to the body of the wagon, and not passed around the ends of the bows.

Officers' Bedding Rolls. To be on top of load.

Rations. Surplus rations (not required for next camp) in bottom of wagon, between ammunition and ration box.

Bacon should be on the bottom of wagon, where the grease will do no harm.

Ration Box. Next to field range, toward front of wagon. After the field range has been unloaded, the ration box is readily accessible and need not be unloaded.

At every camp the ration box should be restocked for the next camp.

Sibley Stoves. Slung on chain, just outside of feed box and below the Buzzacott oven.

Stove Pipe. Should be crated and lashed on in rear of a wagon.

Tentage. Should be rolled and not folded, except in places where absolutely necessary—and placed across wagon, on top of boxes, etc.

(Attention is invited to the fact that canvas becomes unserviceable more from handling and transportation than from wear when in actual use in sheltering troops).

The tents, properly dried out, should be laid out smoothly on the ground; the part of the wall appearing uppermost should be folded over toward the peak of the tent; that underneath should be (by lifting the lower part of the tent) in like manner folded under and toward the peak; then by commencing at the peak, at the final folding, the wall of the tent will appear on the outside of the completed roll.

Ropes not required for securing the bundle should be folded inside.

Tent Pins. On top, in sacks.

Tent Poles. Should be tied with a rope and placed just inside

the bows so as to extend above the wagon bed side; or carried in two iron hooks suspended from side of wagon bed, about four feet apart.

NOTES

1 **Pots and Kettles.** Should be in gunny sacks so as not to dirty everything.

2 **The Quartermaster-Sergeant** should ride on one of the wagons.

3 **A Noncommissioned Officer** should personally superintend the loading of every wagon, the same noncommissioned officer always having charge of the same wagon.

4 **The Jockey Box** should be left entirely for use of teamster, and in which should be kept wrench, grease, spare bolts, mule shoes, etc.

5 A detail of men, the size of which depends upon the number of wagons, should accompany the train. Often the guard, or old guard performs this duty, but it is preferable to detail men who know how to meet emergencies such as a wagon tipping over on a hillside, wagons requiring repacking, mule down and hurt, etc.

TRANSPORTATION AND CARING FOR MEANS 39 OF TRANSPORTATION

CHAPTER V

TRANSPORTATION AND CARING FOR MEANS OF TRANSPORTATION

Wagon Transportation. According to the Field Service Regulations the following is the field allowance of wagon transportation:

INFANTRY:

A company, 1 field wagon;

A provisional machine gun company, 1 field wagon;

A battalion, 5 field wagons, 2 ammunition wagons;

A regiment, 19 field wagons, 6 ammunition wagons. (This includes a field wagon for the sanitary attached troops).

CAVALRY:

A troop, 2 field wagons;

A provisional machine gun troop, 2 field wagons;

A squadron, 9 field wagons, 1 ammunition wagon;

A regiment, 32 field wagons, 3 ammunition wagons. (This includes 1 field wagon for attached sanitary troops).

Railroad Transportation.

PREPARATION OF CARS.⁽¹⁾—Upon receipt of orders for the movement of troops by rail, the quartermaster charged with supplying the transportation arranges with the railroad authorities for the necessary cars. He procures lists, with weights, of all property to be shipped and makes out the bills of lading. He provides loading facilities and material for blocking and lashing, and constructs the necessary ramps.

Upon arrival of the cars, the quartermaster inspects to see if they conform to the terms of the contract, and reports the result of his inspection to the commander.

Stock cars are inspected with especial care to see that they are all in good order throughout. Projecting nails, bolts, and splinters, loose boards and rotting flooring, broken fixtures on hayracks,

⁽¹⁾ "Preparation of Cars," "Loading and Entraining," "Conduct of the Troops," "Detraining," and "Unloading," are from the Field Service Regulations.

doors, or troughs, all are sources of danger or discomfort to the animals and of loss to the Government. The cars should be clean before loading, and suitable bedding provided.

Passenger cars must be clean, fully supplied with water and ice, and sufficiently lighted and heated. The urinals and closets must be in good condition, well supplied with toilet paper and water, and the sleeping accommodations according to contract.

Each train should be equipped with water buckets, lanterns, axes, and crowbars.

After the cars have been accepted, the number of men allotted to each is marked on the side or steps. The cars are then assigned to organizations and plainly marked.

Loading and Entraining.—At the proper time loading is begun and carried on, usually by the troops, pursuant to the orders of the commander. Heavy property may be loaded by details before the arrival of the troops.

The following order is generally observed in loading:

1. Company property, etc., not used in transit (in box cars locked and sealed by railroad employees prior to departure of train):
 - Company property.
 - Property of officers and men.
 - Ammunition.
 - Rations.
 - Sanitary stores.
 - Tentage.
 - Cooking utensils.
 - Arms and equipment of men when not carried in coaches or baggage car.
2. Transportation (on flat cars):
 - Guns and artillery carriages.
 - Pontons.
 - Wagons, etc.
 - Ambulances.
3. Forage (in box cars).
4. Checkable baggage, rations for use en route and arms (in baggage and kitchen cars under guard).
5. Animals (in stock cars).
6. Men (in coaches or sleepers).

Artillery and other carriages are made secure by lashings and by nailing blocks of wood to the flooring under the wheels.

The arrival of troops at the station should be timed so that there will be no delay in waiting for cars. When the barrack, camp, or bivouac is not more than a mile from the station, troops are not required to fall in until notice has been received from the quartermaster that the cars are at the station and have been inspected and assigned. The command is then marched to the train and the prop-

TRANSPORTATION AND CARING FOR MEANS 41 OF TRANSPORTATION

erty loaded. The organizations are then marched opposite their cars and entrained. The cars are entered simultaneously, each company commander distributing his men according to the assignment. Non-commissioned officers have seats near the doors.

Troops traveling by train seldom require their arms or all of their equipment. For instance, when sleepers are provided, they generally require no equipment other than their canteens and haversacks, the mess kits and necessary toilet articles being carried in the latter. For mounted troops the saddlebags take the place of haversacks. A few revolvers or rifles suffice for the necessary guard duty. Therefore, to add to the comfort of the men, train commanders may cause the arms and equipments not required en route to be properly secured and stored in a property or baggage car.

Mounted troops dismount upon arrival and remove the horse equipments except the halter. Each man's equipment, except halter, canteen, and saddlebags, is then securely tied in a gunny sack (or other receptacle supplied by the Quartermaster's Department), marked with the number of the man and letter of his troop, and loaded in the proper car. Each troop, except the horse holders, is then marched to its cars where the men deposit their arms (if not otherwise disposed of), canteens, and saddlebags. It then marches back, relieves the horse holders, and loads the horses. The horse holders, unless otherwise ordered, repair to their cars, carrying their arms (if left with them), canteens, and saddlebags. For short journeys the horses may be loaded, saddled (stirrups crossed) and bridled, or the bridles may be tied on the saddles.

In the field artillery a similar method is pursued. The harness is usually tied up in sets, plainly marked, and loaded in a box car.

Animals can be conveniently loaded through chutes of stock yards, or from freight platforms level with the car floors. In other cases portable or improvised ramps will have to be used. When it is likely that the animals will have to be unloaded at places without facilities, one or more portable ramps, or material for improvising them, should be carried on the train. The loading should proceed without noise or confusion, the animals being led quietly to the car door and turned over to the four men, two for each end, who do the loading. The animals should be packed as closely as possible, except

in very hot weather. Halters are not removed. Gentle animals should be placed opposite the doors and are therefore loaded last.

The *time* required for loading each train depends upon the railroad facilities and upon the experience of the troops. For troops leaving station to go into the field, or changing station in the field, the time required should not exceed:

One hour for infantry.

Two hours for cavalry and light artillery.

Three hours for heavy artillery and for engineers with bridge train.

All movements of the troops in loading, entraining, and detraining, feeding and watering, and exercising men and horses are made, as far as practicable, in military formation and pursuant to command, thus avoiding confusion and saving time.

CONDUCT OF THE TROOPS.—Delays caused by the troops, whether in loading and entraining or during the journey are inexcusable. They interfere with railroad schedules and are a source of great annoyance.

The railroad employees and subordinate officials have nothing to do with the questions of military discipline and administration. Requests or complaints that they may have to make should be addressed to the station or to the conductor of the train for transmission to the commander.

The troops on their part must not interfere with the operation of the railway service. Officers and enlisted men give no orders to employees, and protests, complaints, and arguments are strictly prohibited. The commander is the sole intermediary between the troops and the railroad personnel. In case of deficiencies and other matters requiring correction, he addresses himself only to the official in charge.

The senior noncommissioned officer in each car is responsible for cleanliness and good order. Spitting on the floors, defacing wood-work and windows, and every species of disorder must be prevented.

The commander may station sentinels at the doors of each car to prevent the entrance of unauthorized persons and to keep soldiers from riding on the steps, platforms, or tops of cars, and from leaving without permission. If it is desirable to exercise the troops, they should leave the cars in a body, under the officers.

Smoking is prohibited in cars loaded with animals or forage.

Careful attention is paid to the *messing* of the men, whether in kitchen cars or in the coaches where the men ride. A mess officer

TRANSPORTATION AND CARING FOR MEANS 43 OF TRANSPORTATION

supervises the preparation and serving of the meals and requires the men to keep their mess kits scrupulously clean.

The commander causes frequent inspections to be made to see that his instructions for the preservation of cleanliness and good order are fully carried out.

When the stock cars provided are such that the animals can be fed and watered on the trains, it is unnecessary to unload them for exercise or recuperation unless the weather is very hot and the journey long. Should the railway company insist upon unloading the animals in compliance with the law, the commander will, in time of peace, give the necessary order.

On occasions when troops have been allowed or required to leave the train for exercise or duty, the commander will cause the "assembly" to be sounded five minutes before departure.

DETRAINING AND UNLOADING.—The train *schedule* is arranged, when practicable, for arrival at destination in the morning. The troops are notified in time to prepare for detraining.

The officers and guard are the first to leave the cars. The commander meets the staff officer sent to the train, receives instructions, if any, gets his bearing, and orders the troops to detrain. As soon as the passenger coaches or sleeping cars are empty, the quartermaster, or a specially designated officer, accompanied by the conductor, if practicable, makes an *inspection* of the cars and notes their condition; the result is reported to the commander.

The troops procure their field kits and march to camp without delay, leaving details to bring up the property. If the camp is distant, arms are stacked and a part or all of the command unloads the train.

In the *cavalry* the men are marched to the vicinity of the stock cars, where the saddlebags and canteens are placed in line on the ground under guard. The remaining articles of the field kit and horse equipments are then unloaded and placed with the preceding articles. The horses are then unloaded, saddled, and the troops formed.

Animals are unloaded quietly, each one being led to the opening so that his body will be athwart the car before leaving it.

The command may be marched to camp at once, if near the station; otherwise picket lines are stretched, or the horses are held while the property is unloaded.

Artillery unloads in a manner similar to that of cavalry.

On account of accidents, freight blockades, or action of the enemy, it may be necessary to unload in the open country. In such cases portable or improvised ramps will have to be used. Lacking these, the train may be stopped in a low cut, and cross-ties, baled hay, car doors, and turf utilized for the rapid construction of ramps of sufficient height to permit unloading of animals.

LOADING ANIMALS ON CARS¹

Except in hot weather, pack as many animals in the car as you can, as they will ride better than if loosely packed. If an animal happens to fall down in the car it will be almost impossible for it to get up, and the probabilities are it will be trampled to death. For this reason load sick or injured animals in cars by themselves, and build separate stalls for each animal, if practicable. Before loading examine each car carefully to see that the floor boards are not rotten or broken, that the sides are secure, and that there are no projecting nails or splinters. The car should be clean, and the floor covered with sand, sawdust or straw. Where cleats on the floor are not used it is advisable to have toe calks on the animals' shoes. The man in charge should be provided with a candle, lantern, bucket, and a hatchet. Where the boards on sides of car are not close together, an animal is liable to get his hoof between the boards, and when other means fail to disengage it, a hatchet is useful in cutting away a part of the board. In loading animals use the railroad platform, or the loading ramp found at railroad stations, or make a ramp, well supported and with strong sides. Lead the animals by halters and straps up the ramp and into the car, and take off the halter. The first animal should be led to one end of the car and the second to the other end, leaving the center of the car for the last animals loaded. Arrange the animals so that the alternate ones shall face in the same direction.

Do the loading quietly, and have the animals follow one another promptly, so as to avoid delay. In some cases it may be necessary to blindfold an animal before he can be led into the car. An obstinate animal can be made to enter by holding its head up, twisting its tail,

(1) The articles *Loading Animals on Cars*, *Loading Ambulances on Cars*, *Loading Wagons on Cars*, *Parking Trains*, *Care of Animals, Wagons and Harness in the Field* and *List of Articles to be Carried on Each Wagon*, are reprinted from the **MANUAL OF INSTRUCTIONS FOR QUARTERMASTERS SERVING IN THE FIELD.**

TRANSPORTATION AND CARING FOR MEANS 45 OF TRANSPORTATION

and pushing it by main force into the car. Before loading see that the door on farther side of car is closed and fastened, and after loading is complete, fasten the second door.

Where cars contain hayracks and water troughs, see that they are in good condition, and fill racks before loading. Animals should be unloaded and exercised at least once in twenty-four hours.

They should be watered and fed twice a day.

LOADING AMBULANCES ON CARS

Except for short journeys, ambulances should be knocked down before loading. Secure a flat car 36 feet long by about 9 feet wide. Take the beds off the running gears by unscrewing nuts from the bolts that hold the sills of the beds to the running gears. Also take off the rear steps. Six beds can now be placed on the car by taking the first bed and placing it in one corner of the car (its length parallel to the car), the side of the bed coming out to the stakes, or the places for stakes on the side of car. Place the second bed alongside of the first, allowing it to slip back two inches on account of the sills. Arrange the other four beds behind the first pair, well closed up; then put in stout stakes and cover ambulance tops with paulins or old canvas, as a protection to the tops from sparks. It is very important that the nuts should be put back in their proper places. Secure the water tanks on ambulances, and place the running gears in a box car and number them corresponding to the ambulances, if the ambulances are of different makes.

For short journeys, take off wheels and rear steps and unyoke axles from springs. For the axles substitute a piece of hard wood, which should not be longer than the width of ambulance. Crate wheels and put inside of ambulance, bracing same, so there will be no liability of injury to sides.

LOADING WAGONS ON CARS

Remove the beds from the running gears and take off the rear end gates. Get a 36-foot flat car, or even a longer one. Place the first bed in one corner of the car (its length parallel to the car), so that its side will come out to the stakes or places for stakes on side of car. Take the second bed, reverse it so that the front end shall be

opposite rear end of first wagon, turn it bottom up, and place it partly inside and partly outside of the first bed, the inner sides being close together. This arrangement forms a box, with closed ends, which can be filled with parts of the body and running gear. Place the third and fourth boxes, similarly arranged, alongside of the first and second, and continue the same arrangement to the other end of the car. In this way, 12 beds can be put in first layer on car.

Arrange the second, third, and fourth layers similarly, and secure the beds by stout stakes and wire. Forty-eight beds, with parts, can thus be shipped on one flat car, the running gears being placed in a box car. Put back all nuts in proper place. Wagons that have been used should never have the bodies knocked down and loaded in box cars, because in endeavoring to take off the nuts, which are sure to be rusted, the outside braces and inside straps are twisted and the bolt ends broken off, rendering the wagons unserviceable. By loading as above described, no damage is done the bed or running gear, and the wagons are easily set up when destination is reached. It is not necessary to number the beds, running gear, etc., except when wagons of different patterns are shipped. If tunnels are on the line of road, load only three layers, or 36 wagon beds on each car.

If cars containing stock and wagons accompany the regiment and it is necessary to run the train in several sections, the cars of stock and wagons should be the first section, and should be accompanied by a sufficient number of men, say one company, to unload and care for stock and wagons, so that when the rest of the regiment arrives there will be no delay in moving baggage to camp.

LOADING PROPERTY IN CARS

The general rule for loading property is to put in first such articles as will not be immediately needed on arrival at destination. The following order of loading should be followed, unless there is a special reason for departing from it:

- Officers' baggage.
- Enlisted men's baggage.
- Ammunition.
- Rations.
- Hospital stores.
- Tentage.

TRANSPORTATION AND CARING FOR MEANS 47 OF TRANSPORTATION

By this arrangement the articles needed first will be unloaded first. Keep the property of each organization by itself, and mark on the car the letter and regiment of the organization whose property is in the car. The cars should be assigned and marked by the quartermaster before loading. If the regiment is to be shipped in two or more sections, see that the proper baggage cars accompany each section, so that when an organization arrives in camp its baggage will be with it. A couple of men should be in each car to guard its contents.

PARKING TRAINS

When the wagons of a regimental train have been unloaded, they should be parked in one line, if practicable, dressed to the right, with an interval of two feet between hubs. The animals should then be unharnessed, watered, tied to picket line, and fed.

When the animals are fed from feed box fastened to wagon pole, increase the interval between hubs to 20 feet.

In a convoy, at the first sign of the presence of an enemy close up all the wagons and form a double column (columns of twos) if the ground will permit. This shortens the length of original column one-half. When the attack begins, or just before it, as the judgment of the commander dictates, form a park in the form of a square or circle, animals inside and their heads close together.

Now lock and fasten the wheels together. In the case of a large train, park the first fifty, bring up the rest of the train and make additional parks, so as to contract as much as possible the space to be defended. In some cases it may be necessary to move the train to the right or left to secure proper parking grounds. Where proper grounds for forming wagons into circles and squares can not be found, form a double column of wagons, and turn them so that the animals will face inward, their heads close together. To unpark, back the wagons out of the park and have them take proper place in column.

To form a circle from double column, the two leading wagons halt and the other wagons move outward to the right and left and come into the circle in their proper order. Light wagons, like ambulances and spring wagons, can be used to fill up any gaps there may be in the circle.

CARE OF ANIMALS, WAGONS, AND HARNESS IN THE FIELD

In order that animals, wagons and harness should be always ready for service, it is very important that the Quartermaster should give them his personal attention. He can not delegate this responsibility to any one else, for he alone will be held responsible for their condition. He should give proper orders regarding the care of this property, and should see that his orders are executed.

Animals

Animals suffer from neglect on the part of those in immediate charge of them, either from failure to water and feed them, or by not examining their feet and promptly attending to slight injuries.

In the field all animals should be fed night and morning, the bulk of the feed being given at night, as the animals have more time to eat it than they have in the morning. The forage allowance is ample, and when animals are hard-worked this allowance should not be cut down.

Water the animals before feeding and at least once during the day if it is practicable to do so. Many teamsters after a hard day's work neglect to water their animals, so that it is especially important to see that this duty is done.

Make a rule that the animals should be fed and watered before the men get their meals.

Have all animals thoroughly groomed at least once a day. In camp this should be done twice a day.

Feed the allowance of salt twice a week. When animals eat the wagon beds and feed boxes, or lick one another's hide, it is a sure indication that they are not getting enough salt.

The feet should be examined and cleaned every night. In a hot, dry country, if there is time to do so, their fore-feet should be poulticed with flaxseed twice a month.

Great attention should be paid to shoeing the animals. The blacksmith should fit the shoe to the foot, not the foot to the shoe. Have the animals shod as soon as they need it. The time for shoeing will be governed by the amount of work performed and the character of the roads. Ordinarily once in three or four weeks will be sufficient. Teamsters should report to the Quartermaster the condition of the

TRANSPORTATION AND CARING FOR MEANS 49 OF TRANSPORTATION

shoes, and when camp is reached the blacksmith should attend to the animals at once. When it is necessary to have an animal shod on the march, turn the team out of the column, and instruct the teamster where and how to join the train.

Park the train at night and tie the animals to the wagons so that the grain may be fed to them in the feed box. Where a picket rope is used, see that it is securely fastened so as to hang about 4 feet from the ground, and that the halter is sufficiently long to allow the animal to lie down.

Animals' shoulders often become sore and the animals rendered unserviceable from the fact that the teamsters, when they take off the harness at night, instead of hanging it on a tree or putting it in the wagon, will throw it on the ground and make no attempt to clean the harness in the morning before using it. In consequence, dirt and mud get on the collars and harness and chafe the skin, resulting in sores that often take weeks to heal.

It would be well to wash the shoulders frequently in strong salt water.

Draft animals should not be driven out of a walk except in cases of urgent necessity. Exception is made in case of animals used on ambulances and spring wagons.

Impress upon teamsters that it is necessary to be kind to all animals. Discharge any man who kicks an animal or strikes him with a club or otherwise mistreats him.

Wagons

When wagons are used every day, especially in a sandy country, have the wheels greased once a day. One to one and one-half pounds of axle grease per wheel per month will be found to be ample in all climates.

It is of the utmost importance that the wheels should be kept thoroughly greased at all times, or the axle will be injured and the axle boxes worn out. Always carry with the wagon train a few extra wagon parts, so that minor repairs may be made at once.

The wagons should be inspected morning and evening to ascertain if anything is broken about them, that the tires are tight, axle nuts well screwed on, etc.

Scrape off all old grease before putting on fresh grease.

Harness

Harness should be examined every day. Note particularly if any stitches are broken, if any parts of the leather are worn thin, badly cracked, or cut, and if any of the buckles, toggles, snaps, hames, chains, bits, and rings are cracked or broken.

Should any defect or weakness be noticed, have the same remedied at once.

Do not allow the harness to be thrown on the ground where it will get muddy and dirty, for when the mud hardens and rubs against the skin sores will result that may render the animal unserviceable for weeks.

In stitching harness, see that knots are not left on any part of the leather which may come in contact with the animal's body.

Avoid these knots by using two double or back stitches at the beginning and end of each row of stitching.

Sew the harness and do not use rivets, especially if the leather has plenty of life and is not extra solid. Use the best linen shoe thread with wax ends in sewing.

The wax should be the spring, summer or winter kind, depending on the season. Buckle the collars when removed from the animals.

CLEANING HARNESS

Harness should be cleaned at least twice a month, and whenever it gets muddy.

For this purpose use a bucket, lukewarm water, sponge, harness soap, harness dressing, neat's-foot oil, and lampblack.

For ordinary cleaning the following instructions should be observed:

Provide a rack to hang the harness on. Where no better arrangement is on hand, insert one end of the wagon pole between the spokes of one of the hind wheels, above the hub, and strap it to the axle.

Hang a set of harness on the pole, dampen the sponge in clean water and pass it over the harness until the dirt has become soft.

Rinse out the sponge as often as necessary, and replace the dirty water with clean water frequently.

Now rub the sponge on the harness soap until you obtain a good lather, then give the harness a good heavy coating of it, and keep rubbing the harness until all dirt is removed. In some instances it may be necessary to use a thin piece of wood to remove the dirt.

TRANSPORTATION AND CARING FOR MEANS 51 OF TRANSPORTATION

After the harness is thoroughly clean, work up a very thick lather, coat the leather parts of the harness with it, and allow it to dry without further rubbing.

After the lather has been absorbed and the leather is dry, put on a light coat of harness dressing. To do this, use a perfectly clean sponge, touch the harness lightly, just enough to spread the dressing, and do not rub. Keep the dressing in an air-tight package when not in use.

When the harness has not been cleaned for some time, and is hard, it should first be cleaned as described above. Afterwards take a pint of neat's-foot oil for each single set of harness to be cleaned, pour it into a pan and mix with it lampblack in the proportion of one teaspoonful to each pint of oil, and stir this mixture until it has a glossy black appearance. In cold weather heat the oil until it is lukewarm, but never hot, before using on harness. Apply the mixture with a small sponge, rubbing it well in. Allow about forty-eight hours to elapse before using harness again. In cold weather allow harness, after being thus oiled, to hang near a fire for an hour.

After the leather is thoroughly dried, apply harness dressing as described above.

CHAPTER VI

MARCHES

In time of war, protection for troops on the march is provided by means of **Advance Guards, Flanking Parties and Rear Guards.**

The average march for infantry is from 15 to 20 miles a day; for cavalry, from 20 to 25, and for artillery from 15 to 25.

When practicable, marches should begin in the morning¹ after the men have had their breakfast, and the following general rules should be observed:

1 The canteens should be filled before the march begins.

2 Infantry should march about 3 miles an hour; cavalry about 5, alternating the walk and trot and occasionally dismounting and leading for short distances; the artillery about 4, the walk being the habitual gait.

3 The pace at the head of the column must be steady and the column must be kept closed up throughout its length.

4 After the first half or three-quarters of an hour's march, the command should be halted for about fifteen minutes to allow the men to relieve themselves and to adjust their clothing and accoutrements.

5 After the first rest, there should be a halt of ten minutes every hour.

Immediately upon halting, the company should be cautioned, "Any man wishing to relieve himself, do so at once"—otherwise some will wait until the halt is nearly over.

6 Indiscriminate rushing for water upon halting should not be allowed—one or more men from every squad should be designated to fill the canteens of the squad.

7 No man should be allowed to leave the ranks without permission of his company commander.

¹ If considerable distance is to be marched without water, the start should be made late in the afternoon and continued until night and then again early the next morning, halting before the sun gets hot.

Men allowed to fall out on account of sickness should be given notes to the surgeon. If a man be very sick a noncommissioned officer or reliable private should fall out with him.

8 Whenever a stream is forded or any obstacle passed, the head of the column should be halted a short distance beyond, so as to enable the rest of the column to close up.

9 In crossing shallow streams, the men should be kept closed up and not allowed to pick their way.

10 All men should be made to keep their places in column.

11 A lieutenant or the first sergeant should march in rear of the company to look after stragglers.

12 Nibbling while actually marching should be prohibited.

13 When the troops march for the greater part of the day, a halt of an hour should be made about noon, near wood and water, if practicable.

14 The halt for the night should be made in plenty of time to allow tents to be pitched, supper cooked, etc., before dark.

15 Since marching at the rear of the column is more disagreeable and fatiguing than marching at the front, organizations should take daily turns in leading.¹

ARTICLES OF WAR

ART. 54. Every officer commanding in quarters, garrison or on the march, shall keep good order, and, to the utmost of his power, redress all abuses or disorders which may be committed by any officer or soldier under his command; and if, upon complaint made to him of officers or soldiers beating or otherwise ill-treating any person, disturbing fairs or markets, or committing any kind of riot, to the disquieting of the citizens of the United States, he refuses or omits to see justice done to the offender, and reparation made to the party injured, so far as part of the offender's pay shall go toward such reparation, he shall be dismissed from the service, or otherwise punished as a court martial may direct.

ART. 55. All officers and soldiers are to behave themselves or-

¹ See "Marches" in the Infantry, the Cavalry and the Artillery Drill Regulations, in Field Service Regulations and in the Army Regulations. See also "The March in Campaign," in Munson's Military Hygiene.

derly in quarters and on the march; and whoever commits any waste or spoil, either in walks or trees, parks, warrens, fish ponds, houses, gardens, grain fields, inclosures, or meadows, or maliciously destroys any property whatsoever belonging to inhabitants of the United States (unless by order of a general officer commanding a separate army in the field) shall, besides such penalties as he may be liable to by law, be punished as a court martial may direct.

CHAPTER VII

CAMPING

Forms and Dimensions of Camps. The forms of camps given in this book are from the Field Service Regulations (1910). It must, however, be remembered that these forms are not fixed and that they must often be materially modified so as to conform to the nature of the ground, the amount of space available and other circumstances.

INFANTRY:

1. *Wall Tents.* If wall tents are used, the tents of companies are usually pitched in two lines 15 to 20 yards apart, facing each other.
2. *Shelter Tents.* If shelter tents are used, they are usually pitched in two lines facing each other, or in a single line facing the head of the column.

CAVALRY AND FIELD ARTILLERY:

1. *Wall Tents.* If wall tents are used, the tents of troops and batteries are pitched either in one line or in two lines as in the case of infantry.
2. *Shelter Tents.* Same as Infantry.

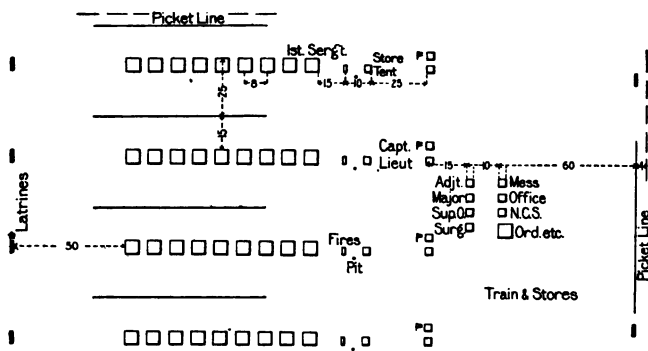
In laying out a camp the picket lines of troops are placed about 40 yards apart; those of batteries about 100 yards apart. With ample ground the picket lines may be placed on the flank beyond the latrines.

On marches from day to day the battery picket lines may be run through the rear wheels of the carriages, thus greatly reducing the size of the camp and economizing labor.

Regimental Camp. A normal regimental camp is a column of battalion camps. The tent of the colonel is 10 yards in rear of the line of the battalion field and staff, as shown in diagram. The tent of the lieutenant colonel is on the right, that of the adjutant on the left of the colonel's tent. The tents of the other staff officers are on the left of the adjutant's tent. The noncommissioned staff, band, hospital, etc., are placed approximately as shown in the diagram for the camp of a regiment of infantry. Animals of the sanitary troops are tied to the train picket line. When the camp is for one or two nights only, the field wagons may be placed on the flanks of the companies.

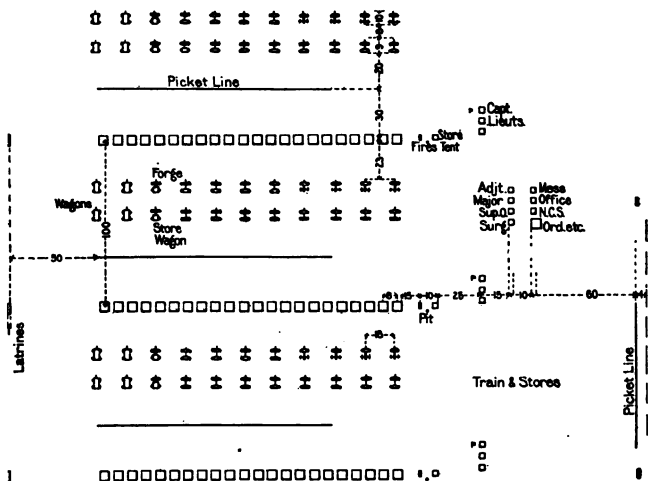
CHAPTER VII.

CAMP OF A SQUADRON OF CAVALRY



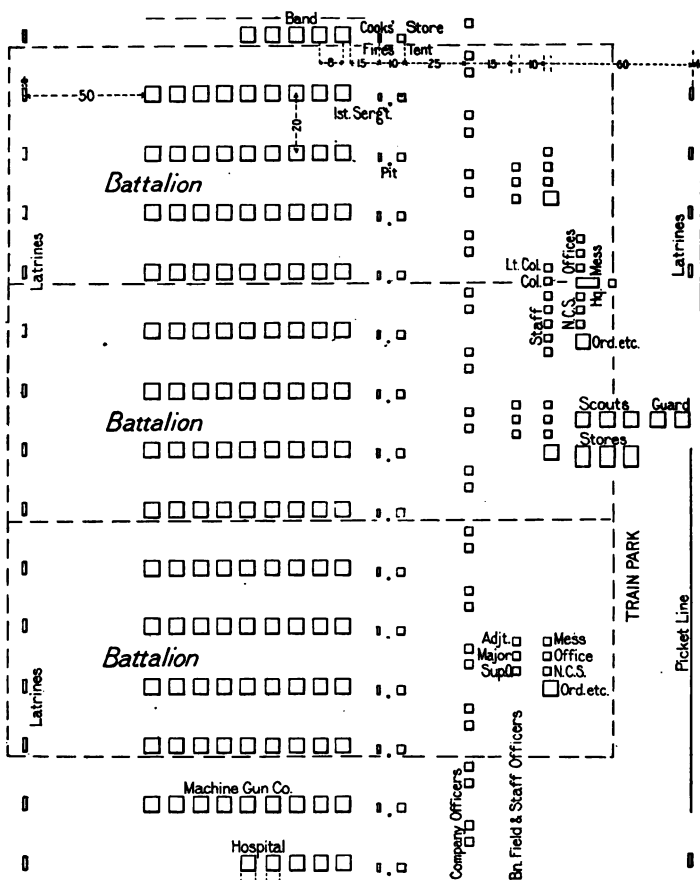
Distances in yards. Dimensions of Camp 150 x 260 yards. For 65 men to the troop. The horses of the commander and staff may be tied to the troop picket lines.

CAMP OF A BATTALION OF ARTILLERY



Distances in yards. Dimensions of Camp 280 x 370 yards. War strength. As a rule the horses of the commander and staff are tied to the battery picket lines.

CAMP OF A REGIMENT OF INFANTRY



Distances in yards. Dimensions of Camp 300 x 260 yards.
 For 65 men to the company. Each additional tent per company increases the width of the Camp 8 yards.

When shelter for company messes is provided, it is placed in line with the company tents, between the first sergeant's tent and cook's fires, this interval being increased by 15 yards for that purpose.

In the encampment of large commands the integrity of the various units is maintained so far as practicable, the headquarters being centrally located. Hospitals are set up only when necessary. The ammunition and supply trains follow the principles laid down for the camping of convoys.

The 1910 Field Service Regulations do not mention conical wall tents. According to the old Field Service Regulations the interval between conical wall tents was 12 paces (30 feet) from center pole to center pole.

In case of limited space, a regiment of infantry can be camped in a ten-acre lot—that is, in a space about 200 x 250 yds.

1 acre = 160 sq. rods;
= 4840 sq. yds.;
= 43560 sq. ft.

640 acres = 1 sq. mile.

A plot of ground 209 feet square—also a plot 70 yds. square—contains a little more than an acre.

Pitching Tents, and Inspection of Shelter-Tent Camp¹

To Pitch Tents—Pitch tents as prescribed by the Infantry Drill Regulations.

Guy Ropes—The length of the guy ropes for the shelter-tent shall be sixty-five inches, from inside of eye-splice to outer end of some permanent device on the other end of the rope, preferably a wire hook. If impracticable to secure a hook, then an overhand knot will be permanently placed, so that from outside of knot to inside of eye-splice shall measure sixty-five inches, with enough free end beyond knot to allow front rope being passed up through rope eyes of both shelter halves and form two half hitches on standing part of guy rope; loose end tucked between shelter halves at top of tent. Rear rope to have free end passed down through both rope eyes and another overhand knot formed inside.

¹ This splendid system for laying out contents of blanket roll, and displaying equipments was prepared by a board of officers of the 7th Infantry.

Inspection of Camp.

The disposition of contents of blanket roll and equipments for inspection will be as follows:

Poncho, if not worn, to be placed in tent first, folded edges to the front, folded as prescribed for the blanket, rubber side out.

Blanket, to be folded once across, opposite to fold already made, then grasp the striped end and fold in three equal folds, once over twice the width of fold and then back again the width of fold. Place blanket inside of tent on top of the poncho with the stripe up and folded edges to the front and on a line with corner pin and pole, the end nearer the center touching the pole.

Cartridge Belt, on top of and on line with front edge of blanket, pockets up, suspenders stretched along belt on top of pockets, inside of suspenders showing.

Haversack, Canteen, Tin Cup and Bayonet Scabbard, attached to belt and lying on the blanket with the bayonet scabbard pointing directly to the rear along the left edge of the blanket.

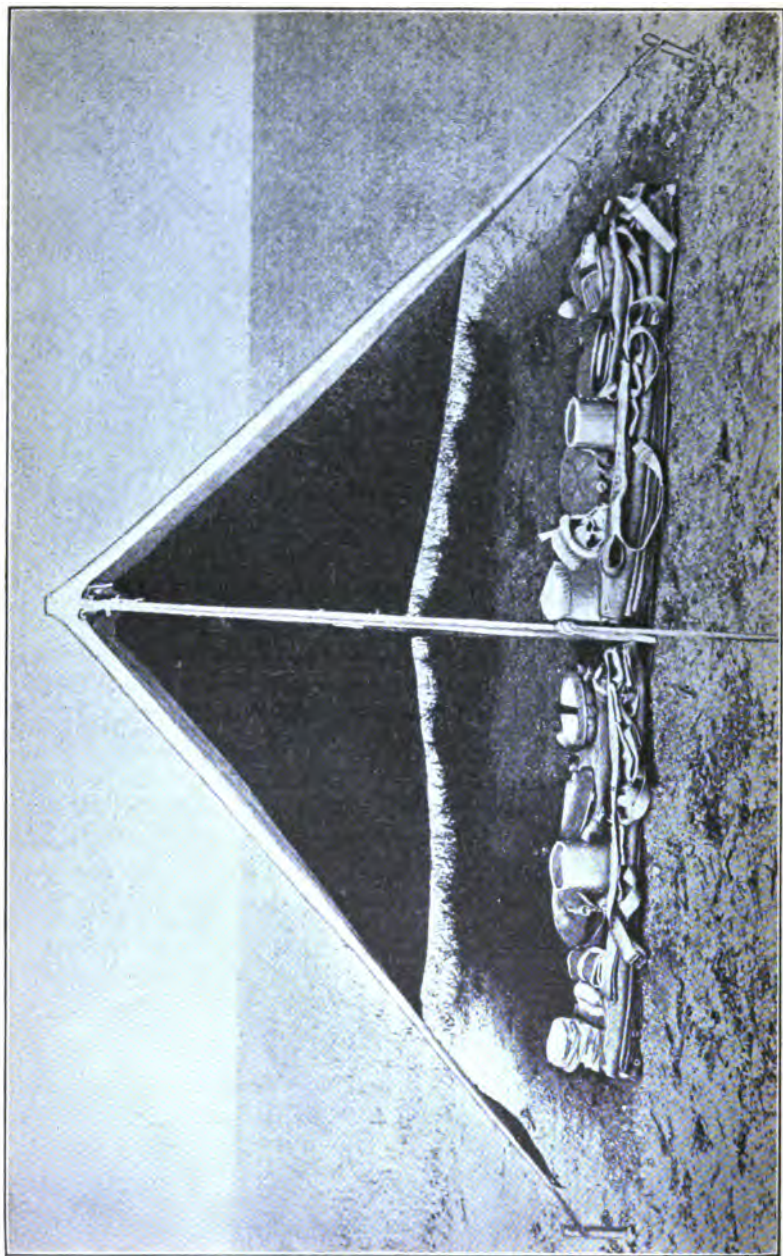
Meat Can, open on top of haversack, concave sides up, parallel to and on line with sides of haversack flap, the cover of the meat can on the left, the hinge and ring to the front, the handle closed.

Knife, Fork and Spoon, close together in the center of the haversack and in the order named from right to left, handles to the front and on the line of the rear ends of the meat can, the letters "U. S." showing.

Towel, neatly folded, front edge on line with bottom of belt, right edge on line and parallel to right edge of blanket.

Housewife, Stockings, Soap, Comb and Toothbrush, neatly arranged on top of towel.

Blanket Roll Straps, on ground against rear edge of blanket, in rear of canteen.



INSPECTION OF SHELTER TENT CAMP. PLATE NO. 1.

OUTPOSTS

In time of war protection for troops in camp is provided by means of **Outposts**.

The art of laying out camps is called **castrametation**.

The following conditions must be considered in the selection of camp sites:

- 1 Location.
- 2 Water, wood and grass.
- 3 Sanitation, and in time of war, defense and safety.

Camps should be on slightly sloping ground, well drained and subject to sunny exposures. Sandy or deep, gravelly soil is desirable, but muddy rivers, ponds, swamps, made ground, alluvial soil and enclosed ravines must be avoided.

In time of war all hills and eminences near by should be occupied by pickets. When camp is established for an indefinite period, drainage should be attended to at once. Each tent should have a shallow trench dug around it and the company and other streets ditched on both sides, all the trenches and ditches connecting with a ditch that carries the water from the camp. All surface drainage from higher ground should be intercepted and turned aside.

In front of every camp of a permanent nature, there should be a parade ground for drills and ceremonies, and the sanitary conditions of the camp should be carefully considered.

In camping for the night on a fordable stream that is to be crossed, always cross before going into camp; for a sudden rise or the appearance of the enemy might prevent the crossing the next morning.

Whenever windstorms are expected, the tent pegs should be secured and additional guy ropes attached to the tents. If the soil be loose or sandy, stones or other hard material should be placed under the tent poles to prevent their working into the soil, thus leaving the tent slack and unsteady. When the soil is so loose that the pegs will not hold at all, fasten the guy ropes to brush, wood or rocks buried in the ground.

Tents may be prevented from blowing down by being made fast at the corners to posts firmly driven into the ground, or by passing

ropes over the ridge poles and fastening them to pegs firmly driven into the ground.

While trees add very much to the comfort of a camp, care should be exercised not to pitch tents near trees whose branches or trunks might fall.

In a hostile country the capability of defense of a camp site should always be considered.

MAKING CAMP

The command should be preceded by the commanding officer or a staff officer, who selects the camp site, and designates, by planting stakes, the lines of tents, the positions of the sinks, guard tent, kitchens, picket line, etc.

After the companies are marched to their proper positions and arms are stacked, the details for guard and to bring wood, water, dig sinks, pitch tents, handle rations, etc., should be made before ranks are broken.

Immediately upon reaching camp and before the men are allowed to go around, patrolling sentinels should be established to prevent men from polluting the camp site or adjoining ground before the sinks are constructed.

Sentinels should be posted over the water supply without delay.

As soon as the tents have been pitched and the sinks dug, the camp should be inspected and all unnecessary sentinels relieved.

The tents should be pitched and the sinks dug simultaneously.

If the weather is at all threatening or if it is intended to camp more than one night, all tents should be ditched.

Should the troops reach camp before the wagons, the companies may be divided into squads and set to work clearing the ground, gathering fire wood, collecting leaves, grass, etc., for beds, etc.

The moment a command reaches camp its officers and men usually want to go here and there under all sorts of pretexts. No one should be allowed to leave camp until all necessary instructions have been given.

Officers should not be allowed to leave camp without permission from the commanding officer, and enlisted men should not be per-

mitted to leave camp without permission of their company commanders.

Sick call should be held as soon as practicable after the tents have been pitched.

Retreat roll call should always be under arms, an officer being with each company and inspecting its arms.

CONSTRUCTION OF SINKS

The sinks must be dug immediately upon reaching camp—their construction must not be delayed until the camps have been pitched and other duties performed. The number of sinks should be reduced to a minimum—each company should not be permitted to have its own sink—there should be one sink to each battalion. The exact location of the sinks should be determined by the commanding officer, or by some officer designated by him, the following considerations being observed:

1 They should be so located as not to contaminate the water supply, and should be on the leeward side of the camp.

2 They should not be placed where they can be flooded by rain water from higher ground, nor should they be so placed that they can pollute the camp by overflow in case of heavy rains.

3 They should be as far from the tents as is compatible with convenience—if too near, they will be a source of annoyance; if too far, some men, especially at night, and particularly if affected with diarrhea, will defecate before reaching the sink. Under ordinary circumstances, a distance of about 75 yards is considered sufficient.

4 The sinks and the kitchens should always be widely separated, and when practicable should be on opposite sides of the camp.

The size of the sink will depend on the length of time the camp is to be occupied. If it be for only one night, a trench about two feet wide and two feet deep will be sufficient, its length depending upon the number of men to be accommodated, a length of about twenty feet being sufficient for a company of one hundred men. If the camp is to be occupied for several days, the sink should be about six feet deep, three feet wide at the top and two feet at the bottom. The soil from the trench should be piled to the rear, from where it can

be scattered as needed over the deposits. The seat may be formed by placing a good stout pole on the edge, about 18 inches above the ground, and supported at each end by forked posts.

The sink should be hidden from view by brushwood stuck into the ground and a roof of boughs should be constructed to keep off the sun. At least twice a day, in the morning and in the evening, the police party should cover the bottom with a slight layer of loose earth. Better still, each man should be made to cover his own defecation with earth, ashes or lime. As a general rule, one soldier for every sink should be especially detailed to see that the defecations are properly covered and that all other rules pertaining to the sinks are obeyed. Lime or crude petroleum, if available, should be spread over the deposits, petroleum being especially good to keep flies away.

When the sink is filled to within two or three feet of the surface its use is to be discontinued and earth thrown in and packed until a slight mound is made above it.

All sinks should be filled in before marching.

See "The Sanitary Administration of the Camp," in "Munson's Military Hygiene."

KITCHENS

The following are simple methods of constructing camp kitchens:

1 Dig a hole about two feet deep, in which build a fire and keep it burning until the hole is full of hot ashes; put what is to be cooked in covered pans which are placed in the hole and covered with ashes, on top of which keep a fire burning briskly.

2 Dig a trench in the direction of the wind, of a width a little less than the diameter of the kettles and about one foot deep at the end from which the wind is blowing, continuing this depth for four or five feet and then gradually decreasing it until the surface of the ground is reached. Build a fire in the deep part of the trench; beginning a short distance from the deep end of the trench, place the kettles over the fire touching one another, stopping up with dry sod the chinks made by the roundness of the kettles, so that the space underneath will form a flue.

3 Dig a trench about two feet wide, one foot deep and five feet long; at each end drive into the ground a forked stick, of equal heights, and place upon them a stout sapling, from which suspend the kettles.

4 In clay soil, preferably on the slope of a hill, dig a hole about three feet square and two feet deep; from one side of the hole, and about one foot below the surface of the ground, run a lateral shaft about one foot square and six feet long, sinking a vertical shaft at the end; connect the lateral shaft with the surface of the ground by three equidistant holes, over which the kettles are placed.

As a precautionary measure against setting the camp on fire, all dry grass, underbrush, etc., in the immediate vicinity of the kitchen should be cut down.

In case of a fire in camp, underbrush, spades, shovels, blankets, etc., are used to beat it out.

Gunny sacks dipped in water are the best fire fighters.

Burning away dried grass and underbrush around exterior of camp is a great protection against fire from outside.

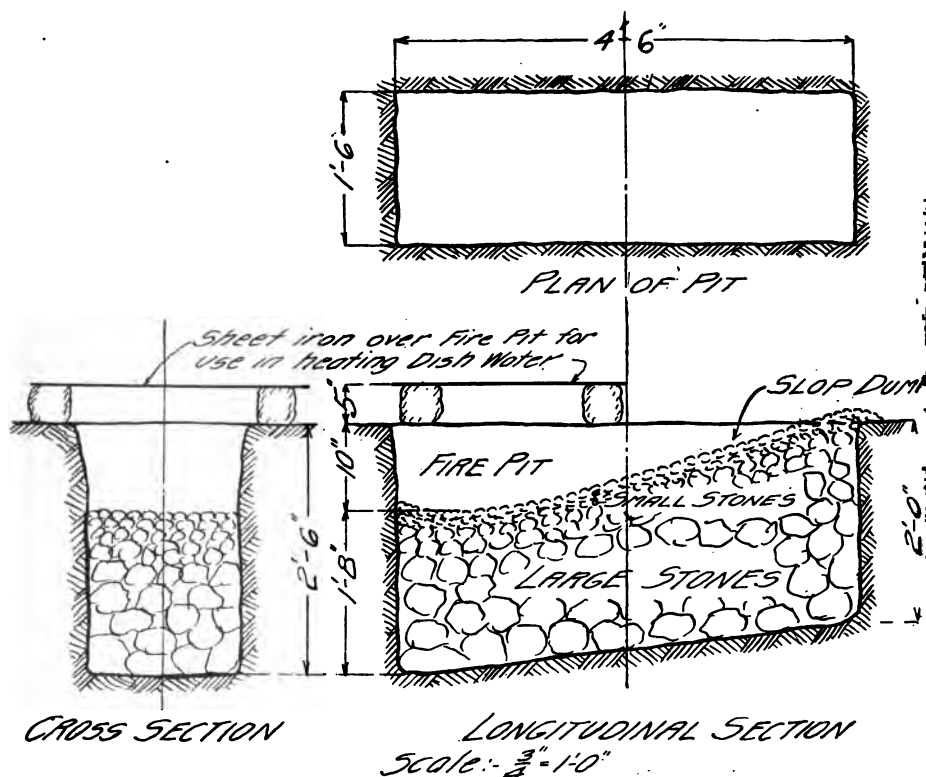
KITCHEN PITS

Pits of convenient size should be constructed for the liquid refuse from the kitchens. Solid refuse should be burned either in the kitchen fire or at some designated place, depending upon whether the camp is of a temporary or permanent nature. Unless the camp be of a very temporary nature, the pits should be covered with boards or other material in order to exclude the flies.

All pits should be filled in with earth before breaking camp.

INCINERATION PITS

The incineration pit used by the National Guard of Pennsylvania, and shown in the following diagram, affords an excellent, simple and economical way of disposing of camp waste and offal, tin cans and dish-water included:

*Description.*

The pit is about $4\frac{1}{2}$ feet long, $1\frac{1}{2}$ feet wide and 2 feet deep at one end and $2\frac{1}{2}$ at the other. It is partially filled with stones, the larger ones on the bottom and the smaller on the top. At one end of the pit the stones extend a little above the surface, and slope gradually toward the other end until the fire pit is reached ten inches below the surface of the trench. Over the fire pit, about five inches above the ground, is placed a crab or a piece of boiler iron, on which is boiled all the water for washing dishes, etc. The fire pit is only about one-half of the stone surface, as the radiated heat keeps the rest of the stones hot, causing all dish and slop water to evaporate quickly.

Any tin cans that may be thrown into the fire pit are removed after a short exposure to the heat and placed in a trench especially dug for the purpose.

BUNKS

Place a number of small poles about seven feet long close together, the upper ends resting on a cross pole about six inches in diameter and the lower ends resting on the ground; or, the poles may be raised entirely off the ground by being placed on cross poles supported by forked stakes at the corners; on the poles place grass, leaves, etc.

WOOD

The firewood should be collected, cut and piled near the kitchen. Dry wood is usually found under logs or roots of trees.

If wagons are not heavily loaded, it is sometimes a good plan to bring a few sticks of dry wood from the preceding camp, or to pick up good wood en route.

WATER

Precautionary measures should always be taken to prevent the contamination of the water, and a guard from the first troops reaching camp should be placed over the water supply. Water used for drinking purposes should be gotten from above the camp, and places below this point should be designated for watering the animals, bathing and washing clothes.

In the field it is sometimes necessary to sterilize or filter water. The easiest and surest way of sterilizing water is by boiling. Boiled water should be aerated by being poured from one receptacle to another or by being filtered through charcoal or clean gravel. Unless boiled water be thus aerated it is very unpalatable and it is with difficulty that troops can be made to drink it.

Filtration merely clarifies—it does not purify. The following are simple methods of filtration:

- 1 Dig a hole near the source of supply so that the water may percolate through the soil before being used.

- 2 Sink a barrel or box into the ground, the water entering therein through a wooden trough packed with clean sand, gravel or charcoal.

- 3 Place a box or barrel in another box or barrel of larger size, filling the space between with clean sand, gravel, moss or charcoal,

and piercing holes near the bottom of the outer barrel and near the top of the inner. The filter thus constructed is partly submerged in the water to be filtered. See also page 97.

4 Bore a small hole in the bottom of a barrel or other suitable receptacle, which is partly filled with layers of sand, gravel, and, if available, charcoal and moss. The water is poured in at the top and is collected as it emerges from the aperture below.

The amount of water used by troops is usually computed at the rate of five gallons for each man and ten gallons for each animal per day.

For a full discussion of the purification of drinking water, see "Water," Munson's Military Hygiene.

POLICING OF CAMP

The proper and efficient police of a camp is of the greatest importance, and the following regulations should be enforced:

1 Company commanders will maintain neatness and proper sanitary conditions within their respective organizations.

2 The officer of the day is charged with the general policing of the camp, utilizing prisoners and fatigue parties for the purpose.

3 Company commanders will make daily inspections of their company quarters, kitchens and sinks.

4 The company streets will be swept daily, and the intervening spaces between tents carefully policed.

5 All tents will be swept out daily.

7 The condition of the outskirts of the camp will be given close attention, being kept free from all refuse.

6 All bedding will be sunned daily.

8 In fair weather, every morning after breakfast the tent walls will be looped up. In cold weather the tent walls will be raised during the absence of the occupants at drill or other duty.

9 Every night at tattoo and also during wet weather the tent ropes will be slackened. They will be tightened again at reveille or when the weather clears.

CHAPTER VIII

CAMP EXPEDIENTS



The Camp Fire Crane.



Camp Pot, Hook and Poker.

While loyalty to superiors is most important in garrison, it is more so in the field, especially in the presence of the enemy, where the lack of absolute loyalty on the part of subordinates may defeat the plans of superiors and result in disaster for both subordinate and superior.

In the field less attention is paid to the appearance of dress, niceties of military courtesy, etc., than in garrison. Field service offers a better opportunity for *individuality*, and every man should be a "natural born hustler," bearing in mind the injunction, "The Lord helps those who help themselves."



Camp Broom.

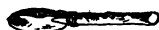


A Good Camp Lamp can be made by using clear tallow fat, (fat of animals), melted down and put in an old tin can. Improvise a wick from unravelled cotton or tent canvas, put one end in can and the other end on edge of can and wire.

A Good Camp Candlestick. A safe one can be improvised from a potato with a hole in it—bottom sliced off so it will stand firmly—or an old can partly filled with dirt.



A Good Camp Spoon, Knife and Fork can be made from a shell and split stick. A fork can easily be whittled, and a good



(Note: The illustrations and very nearly all the text beginning with, "A Good Camp Lamp," on this page to "To Make a Good Camp Lantern," page 266, are from "COMPLETE CAMPERS' Manual," published by the Gold Medal Furniture Co.)

knife made from a piece of tin cut from an old can and inserted in a split stick; lash it tight with wire.

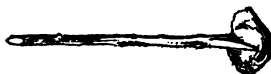


A Good Dinner Plate or Cooking Utensil. from a piece of green thick barked tree, using smooth part for food.

Any Old Tin Can. Top carefully burnt out over camp fire, then scoured makes a good cup or small cooking utensil. Make handle of wire as shown in illustration.



Frying or Broiling without Utensils. Use the green, thick bark of a tree, rough side down on fire. Use the camp fire tongs (as illustrated on page 264) or make a toaster and broiler as shown, from a



The Bark Plate and Broiler.

stick having a split end which will hold the meat over a hot coal fire. Don't pierce the meat.

Always carry a small bag of salt in the haversack.



the watch is gone.

A Reliable Camp Clock. A very accurate one can be improvised by making a sun dial of a piece of stick stuck in the earth where the sun's rays can cast the shadow of the stick on the ground. You can mark the ground most accurately if one of your party has a watch. Then the clock will serve you well, when the man with

Don't Spoil a Good Knife. In opening tin cans in camp, take the camp axe. Cut a cross in the center and open the cuts afterward, but not with the fingers.

To Heat a Tent Without a Stove. Build a camp fire near tent opening, surround it partly with a radiator of logs, bark of tree or brush, so as to throw the heat inside.



Another Way. Throw into camp fire a lot of stones, the larger the better, let them get red hot, put into bucket and carry into tent, invert the bucket over them, and it will surprise you. With a change of stones in the fire you can renew and keep warm all night long;—or use camp kettle.

Still Another Way. (Perfectly safe if common sense is used). Dig a pit half a bucket in size somewhere in the tent. Fill it heaping full of red hot clear coals (embers) from the camp fire, taking care no unburnt or smoky wood is therein. Now cover this with the kettle or pail. With mud, plaster up the edges, and it will keep your tent and you warm all night long. Use camp pails (iron of course).



And Still Another Way. Dig a trench from interior of tent to a fire in a hole outside of tent, covering the trench with old pieces of tin, sod, etc. To heat all the space in the tent, dig a trench all the way through the tent, having the fire at one end of trench and the chimney at the other, both fire and chimney being, of course, outside. The hot air passing through the trench-flue will keep the tent warm.

In Case of Fire in Tent. If serious, lay hold of the bottom of the bedding and pull out, and with a blanket smother the fire quickly. If fire is caught in time you can smother it.

Let the tent go, but save the outfit therein, if possible. You can improvise shelter but not the outfit, so save that part first.

To Find Out Correctly How the Winds Blow. If the wind is very light, place your finger in your mouth for a minute, moisten it, then hold it in the air. The coolest side indicates the direction from which the wind blows.



A Good Fire Shovel.—Can be made of a piece of tin and a split stick; it is also an excellent broiler.

How to Sleep Warm. Sheets of paper, or an old newspaper sewed between two blankets, equals three blankets. A thin vest lined with paper equals two.

In cold weather, it is most important both for comfort and

health that the extremities be kept warm at night. A sweater with high rolling collar, a pair of heavy woolen socks and a woolen knitted nightcap are excellent for this purpose, being equivalent to two or three blankets.

The feet may be kept warm by inclosing them in paper bags, tied around the ankles.

Chafing. If the seams of underwear chafe or gall the skin, turn inside out. Common corn starch is a most excellent talcum or chafing preventative and cure.

If Soaking Wet. If soaking wet and no dry clothes handy take off wet garments and wring them out as dry as possible—put on again,—you are less liable to take cold, and will be much warmer besides.



Camp
Fire
Tongs.

Burn Up All Kitchen and Table Refuse. Even potato skins and wet tea or coffee grounds, burn out even tin cans in the camp fire, if thrown out they are fly and maggot breeders, and mean lots of flies in camp. Burnt out and thrown aside they are harmless.

To Test the Freshness of Meats, Game, Etc. Thrust a knife blade into center of flesh—remove the blade; your nose to the knife blade will do the rest. Meat is often fresh outside when the inside is not. Your nose can't tell inside—the knife blade can.

For Washing Flannels and Woolens. Don't wring out, hang them up dripping wet and they won't wrinkle up or shrink.

To Keep Fresh Meats, Game, Etc. By hanging in old sack, sack opening downward; secure with cord, tied to legs of game; then take a few branches of leaves and cover; the rustle of these leaves will help keep the flies away and the meat cool. Fasten the bottom opening with splinters of wood, so you can get at meat without trouble.

Biscuit Cutter and Rolling Pin. The tin baking powder can cover makes an excellent biscuit cutter and any bottle a good rolling pin—even an unopened can.

To Cool Water. Any old well soaked cloths, wrapped around outside of bottle or bucket will, if hung in the shade, help cool contents. Remove the cork.

Water may also be cooled by wetting the canteen and then hanging in a cool place.

Clothes Hanger. A wire or rope stretched across upper part of the vertical tent poles makes a good clothes hanger.

Hot Water Bottle. A canteen filled with boiling water is a foot warmer (a hot water bottle for your camp bed), that insures you the warmth of an extra blanket, and is invaluable in emergencies of camp sickness.

Life Preservers. Three or four empty canteens, tightly corked and fastened together, make a very good life preserver.

A Good Camp Bed for Tents, or Tent Carpet. Take fine ends of any branch clippings, and plenty of them. Commence at the head of tent, lay rows of them butts to the rear, in successive layers. If this is done right and carefully and ends locked with a log rolled on so as to hold end in place, an extremely soft bed is the result. Over this spread a piece of canvas or blanket.

If Thirsty and Can't Find Water. Place a pebble or button in the mouth and keep it there; it will surprise you with the result, and relieve that dryness entirely—try it.

Lost in Camp. When you find you have lost your way, don't lose your head—keep cool; try and not let your brains get into your feet. By this, we mean, don't run around and make things worse, and play yourself out. First: Sit down and think; cool off, then climb a tree, or hill, and endeavor to locate some familiar object you passed, so as to retrace your steps. If it gets dark, build a rousing camp fire. Ten to one you will be missed from camp, and your comrades will soon be searching for you, and your fire will be seen by them. Give distress signals, but don't waste all your ammunition thus. It's ten to one morning and a clear head, after a comfortable night, (if you make it so) will reveal to you the fact that your camp is much closer to you than you imagined.

To locate position—note the limbs and bark of trees—the north side of trees can be noted by the thickness and general roughness. Moss most generally is to be found near the roots on the north side. Note also, limbs or longer branches, which generally are to be found longer on south side of trees, while the branches exposed to the north most generally are knotty, twisted and drooped. In the forest the tops of the pine trees dip or trend to the north; also: If you find water, follow it; it generally leads somewhere—where civilization exists. The tendency of people lost, is to travel in a circle uselessly; by all means, keep cool, and deliberate. Blaze your way, by leaving marks on trees to indicate the direction you have taken.

To Make a Fire Without Matches. Take a dry handkerchief or cotton lining of your coat, scrape out a very fine lint, a few handfuls, by using the crystal of your watch, compass or spectacle, a sun glass can be made that will ignite the lint, which can be blown to fire.

Another Way. Sprinkle powder of cartridge as a fuse to the cotton lint, and with the cartridge percussion cap you can easily ignite the lint, dry moss, leaves, etc.

Still Another Way. Take scrapings of very fine pine wood, find a piece of quartz or hard ragged rock, by using your knife or bayonet as a steel you have a practical flint and steel. If you haven't these things, use two pieces of rough, jagged stone and by striking them together sharply in slanting blows you can ignite the lint or scrapings.

To Dry Inside of Wet Boots, Shoes, Etc. The last thing at night take a few handfuls of clean dry pebbles, heat them in frying pan, kettle or campfire until very hot, place them in the boots or shoes, they will dry them out thoroughly in a few hours, shake once in a while. Oats or corn may also be used, but they are not available always and pebbles are. Now is an excellent time to grease or oil them.

To make a Good Camp Lantern. From any ordinary clear glass bottle, if the bottle is long necked. Heat a piece of wire red hot, and wrap it around the part below the neck, the wide part, submerge the neck into a bucket of water and it will cut the part surrounded by the hot wire as smooth and clean as if cut to order. Now wire a handle to carry it by, with a loop over the bottom, fill $\frac{1}{4}$ full with moist dirt or sand, forming a hole therein with a round stick, insert your piece of candle in this hole, cover with a piece of old tin can top (perforated with holes) and you have a good outside camp lantern.

To Keep Matches Dry. Cork a few in a small bottle.



To Correctly Ascertain the Points of the Compass. Face the sun in the morning; spread out your arms straight from the body—before you is east, behind you the west, to your right hand, the south, left, north, (accurately.) If the sun don't shine, note the tops of pine trees, they invariably dip to the north. (See also lost in camp).

Bathing. Be careful about bathing in strange places. Don't dive; weeds may be at bottom or sharp rocks. Water that looks inviting often is full of treacherous, slimy weeds in which once caught it is almost impossible to get free. Look out for deep unseen mud holes. Better splash water over body than to take big risks.

Drying Clothes in Cloudy Weather. Build a dome-shaped work by bending twigs into a half circle, with ends in ground, over a *smoldering* fire, and place the clothes on the bent twigs.

Fording Streams. In case of a quick-sand bottom, send in a few men on foot to find a solid place. Stakes are then driven to mark the way, and the command crosses the stream. Wagons should not stop while crossing a stream, for in case of soft bottoms, they will likely get bogged.

Mules should always be watered before starting to cross a stream—otherwise they will very likely stop to drink, and the wagon may get stuck.

It is well to remember that the shallowest water is generally found from one salient—that is, one projecting point—of the bank to another, diagonally across. The bends and hollows or re-entrants usually have the deepest water.

To Cross an Unfordable Stream. If narrow, try to construct a bridge of some kind, or make a temporary crossing by felling trees opposite to each other on opposite sides.

Wagon bodies covered with canvas or wagon sheets, lashed at the ends and fastened, make good boats.

CHAPTER IX

INDIVIDUAL COOKING⁽¹⁾

For such individual cooking as may be necessary for the soldier when thrown upon his own resources, the following bills of fare have been prepared. Where the tin cup and spoon are mentioned, reference is made to those issued with the field mess kit.

Remember that the best fire for cooking is a small, clear one, or better yet, a few brisk coals.

Almost anything that can be cooked at all can be prepared in the mess kit, though the variety is necessarily small and quantities limited on account of few utensils of small capacity.

Company commanders in estimating the amounts that will be required for each meal may assume that one man will consume for one meal about—

- 1 ounce of sugar.
- ½ ounce of coffee, 1 ounce chocolate or cocoa, or 1/10 ounce of tea.
- 4 ounces of dried vegetables.
- 4 ounces of flour or 4 hardtacks.
- 8 ounces of fresh vegetables.
- 4 ounces of sliced bacon or 6 to 8 ounces of fresh meat.
- 1/5 ounce of salt.
- 1/50 ounce of pepper.

Bills of fare.

	Meats.	Vegetables.	Bread, etc.	Drink.
1	Bacon.....	Boiled rice.....	Flapjack.....	Coffee.
2	Meat and vegetable stew.....	Flapjack.....	Flapjack.....	Coffee.
3	Broiled steak.....	Fried potatoes and onions.	Hard bread....	Cocoa.
4	Bacon.....	Stewed tomatoes.....	Hoecake.....	Coffee.
5	Bacon.....	Oatmeal.....	Hard bread....	Tea.
6	Bacon.....	Baked potatoes; rice.....	Flapjack.....	Chocolate.
7	Fried Steak.....	Boiled potatoes; cold tomatoes.	Hard bread....	Coffee.
	Etc.....	Etc.....	Etc.....	Etc.

(1) From "Manual for Army Cooks," prepared by the Subsistence Department.

Bills of Fare—Continued.

OR, WHEN TIME IS MORE LIMITED.

8	Fried bacon.....	Fried potatoes.....	Hard bread...	Coffee.
9	Fried bacon.....		Flapjack....	Coffee.
10	Corned beef (cold).....	Tomato stew.....	Hard bread...	Coffee.
11	Fried fish and bacon.....	Baked potatoes.....	Hard bread...	Coffee.
12	Meat and vegetable stew.....		Hoeecake....	Tea.
13	Broiled steak.....	Baked potatoes.....	Hard bread...	Cocoa.
14	Boiled fish.....	Fried potatoes.....	Hard bread...	Tea.
	Etc.....	Etc.....	Etc.....	Etc.

SUGGESTIONS FOR HANDLING BILL OF FARE NO. I.

Take two-thirds of a cup of water and bring to a boil. Add 4 spoonfuls of rice and boil until soft, i. e. until it can be mashed by the fingers with but little resistance. This will require about fifteen minutes. Add 2 pinches of salt and, after stirring, pour off the water and empty the rice out on the lid of the mess pan.

Meanwhile, fry 3 slices of bacon until slightly browned in the mess pan over a brisk fire or hot coals, and lay them on top of the rice, leaving sufficient grease in the pan in which to fry the flap jack.

Take 6 spoonfuls of flour and one-third spoonful of baking powder and mix thoroughly. Add sufficient cold water to make a batter that will drip freely from the spoon. Add a pinch of salt and 2 pinches of sugar and pour the batter into the mess pan, which should contain the grease from the fried bacon. Place over medium hot coals and bake from five to seven minutes; see that it will slip easily in the pan and then, by a quick toss, turn it over and continue the baking from five to seven minutes longer or until, by examination, it is found to be done.

While the batter is frying, wash out the tin cup; two-thirds fill with water and let come to a boil. Add 1 medium heaping spoonful of coffee and stir well, and, if desired, 1 spoonful of sugar and let boil for about five minutes. Let simmer for about ten minutes longer. Settle by a dash of cold water or let stand a few minutes.

A hot meal is now ready to serve. Time about forty minutes.

RECIPES.

Drinks.

(For one meal for one man.)

Article and amount.	Amount of water.	Add when—	Let boil	Add sugar if desired.	Remarks.
Coffee, 1 heaping spoonful.	<i>Cup.</i> §	Water boils.	<i>Min.</i> 5	<i>Sp'nful.</i> 1	Stir grains well when adding. Let simmer ten minutes after boiling. Settle with a dash of water or let stand a few minutes. Ready to serve.
Cocoa, 1 heaping spoonful.	§	..do..	5	1½	Stir when adding until dissolved. Ready to serve when sufficiently cooled.
Chocolate, 1 cubic inch.	§	..do..	5	1½	Do.
Tea, ½ level spoonful.	§	..do..	0	1	Let stand or "draw" eight minutes. If allowed to stand longer, the tea will get bitter unless separated from the grains.

NOTE.—Coffee made by above recipe is of medium strength and the same as when using 4 ounces to the gallon of water. It is within the limit of the ration if made but twice each day.

Tea.—A little more than medium strength, the same as when using ½ ounce to the gallon, and within the ration allowance if made three times per day.

Chocolate and cocoa.—About 1 ounce per man per meal. If available, milk should be used in the place of water, and should be kept somewhat below the boiling point. Mix a 1-pound can of evaporated milk with 3½ quarts of water to make 1 gallon of milk of the proper consistency for use in making cocoa or chocolate.

Dried Vegetables.

(For one meal for one man.)

Article and amount.	Amount of water.	Add when—	Let boil.	Season with pinches of salt.	Add heaping spoonful sugar if desired.	Remarks.
Rice, 4 heaping spoonfuls.	<i>Cup.</i> 1	Water boils.	<i>Hours.</i> 1	2	1	Should be boiled until grains (while still nicely separated) may be crushed between the fingers with but little resistance. Then drain off the water.
Cornmeal, hominy, fine oatmeal, 4 heaping spoonfuls.	1	..do..	1	2	....	All water should now be taken up by the cornmeal, hominy, or oatmeal, which forms a thick paste.
Dried sweet corn, 4 heaping spoonfuls.	1	..do..	1	2	1	
Lima beans, 4 heaping spoonfuls.	1	Water is put on.	2 or 3	1	....	When done the beans should still be whole but soft. Add one small slice of bacon one-half hour before done. Add water as required.
Chili beans and frijolas, 4 heaping spoonfuls.	1	..do..	3 or 4	1	....	Above remark applies.
Beans, issue dried green peas, hominy, coarse split peas, 4 heaping spoonfuls.	1	..do..	3 or 4	1	....	Not recommended on account of time required for cooking.

NOTE.—By a *heaping spoonful* is meant here all that can readily be taken up.

A *pinch of salt* is the amount that can readily be taken up between the end of the thumb and forefinger.

MEATS.

Bacon.—Cut side of bacon in half lengthwise. Then cut slices about five to the inch, three of which should generally be sufficient for one man for one meal. Place in a mess pan with about one-half inch of cold water. Let come to a boil and then pour the water off. Fry over a brisk fire, turning the bacon once and quickly browning it. Remove the bacon to lid of mess pan, leaving the grease for frying potatoes, onions, rice flapjacks, etc., according to recipe.

Fresh meat—To fry.—To fry, a small amount of grease (1 to 2 spoonfuls) is necessary. Put grease in mess pan and let come to a smoking temperature, then drop in the steak and, if about one-half inch thick, let fry for about one minute before turning—depending upon whether it is desired it shall be rare, medium, or well done. Then turn and fry briskly as before. Salt and pepper to taste.

Applies to beef, veal, pork, mutton, venison, etc.

Fresh meat—To broil.—Cut in slices about 1 inch thick, from half as large as the hand to four times that size. Sharpen a stick or branch of convenient length, say from 2 to 4 feet long, and weave the point of the stick through the steak several times so that it may be readily turned over a few brisk coals or on the windward side of a small fire. Allow to brown nicely, turning frequently. Salt and pepper to taste. Meat with considerable fat is preferred, though any meat may be broiled in this manner.

Fresh meat—To stew.—Cut into chunks from one-half inch to 1-inch cubes. Fill cup about one-third full of meat and cover with about 1 inch of water. Let boil or simmer about one hour or until tender. Add such fibrous vegetables as carrots, turnips, or cabbage, cut into small chunks, soon after the meat is put on to boil, and potatoes, onions, or other tender vegetables when the meat is about half done. Amount of vegetables to be added, about the same as meat, depending upon supply and taste. Salt and pepper to taste. Applies to all fresh meats and fowls. The proportion of meat and vegetables used varies with their abundance and fixed quantities can not be adhered to. Fresh fish can be handled as above, except that it is cooked much quicker, and potatoes, onions, and canned corn are the only vegetables generally used with it, thus making a chowder. A slice of bacon would greatly improve the flavor. May be conveniently cooked in mess pan or tin cup.

FRESH VEGETABLES.

Potatoes, fried.—Take two medium-sized potatoes or one large one (about one-half pound), peel and cut into slices about one-fourth inch thick and scatter well in the mess pan in which the grease remains after frying the bacon. Add sufficient water to half cover the potatoes, cover with the lid to keep the moisture in, and let come to a boil from fifteen to twenty minutes. Remove the cover and dry as desired. Salt and pepper to taste. During the cooking the bacon already prepared may be kept on the cover, which is most conveniently placed bottom side up over the cooking vegetables.

Onions, fried.—Same as potatoes.

Potatoes, boiled.—Peel two medium-sized potatoes or one large one (about one-half pound), and cut in coarse chunks of about the same size—say $1\frac{1}{2}$ -inch cubes. Place in mess pan and three-fourths fill with water. Cover with lid and let boil or simmer for fifteen or twenty minutes. They are done when easily penetrated with a sharp stick. Pour off the water and let dry out for one or two minutes over hot ashes or light coals.

Potatoes, baked.—Take two medium-sized potatoes or one large one cut in half (about one-half pound). Lay in a bed of light coals, cover with same and smother with ashes. Do not disturb for thirty or forty minutes, when they should be done.

Canned Tomatoes.—One 2-pound can is generally sufficient for five men.

Stew. Pour into the mess pan one man's allowance of tomatoes, add about two large hardtacks broken into small pieces, and let come to a boil. Add salt and pepper to taste, or add a pinch of salt and one-fourth spoonful of sugar.

Or, having fried the bacon, pour the tomatoes into the mess pan, the grease remaining, and add, if desired, two broken hardtacks. Set over a brisk fire and let come to a boil.

Or, heat the tomatoes just as they come from the can, adding two pinches of salt and one-half spoonful of sugar if desired.

Or, especially in hot weather, eaten cold with hard bread they are very palatable.

HOT BREADS.

Flapjack.—Take 6 spoonfuls of flour and one-third spoonful of baking powder and mix thoroughly (or dry mix in a large pan

before issue, at the rate of 25 pounds of flour and three half-pound cans of baking powder for 100 men). Add sufficient cold water to make a batter that will drip freely from the spoon, adding a pinch of salt. Pour into the mess pan, which should contain the grease from fried bacon, or a spoonful of butter or fat, and place over medium hot coals sufficient to bake so that in from five to seven minutes the flapjack may be turned over by a quick toss of the pan. Fry from five to seven minutes longer or until, by examination, it is found to be done.

Hoecake.—Hoecake is made exactly the same as a flapjack by substituting *corn meal* for *flour*.

EMERGENCY RATION.

Emergency Rations.—Detailed instructions as to the manner of preparing the emergency ration are found on the label with each can. Remember that even a very limited amount of bacon or hard bread, or both, taken with the emergency ration makes it far more palatable, and greatly extends the period during which it can be consumed with relish. For this reason it would be better to husband the supply of hard bread and bacon to use with the emergency ration when it becomes evident that the latter must be consumed, rather than to retain the emergency ration to the last extremity to to be used exclusively for a longer period than two or three days.

CHAPTER X

FIELD COOKING⁽¹⁾

In permanent camp.—Cooking in a permanent camp is very similar to cooking in garrison, and when fresh beef is regularly supplied the same bills of fare can be followed very closely. The dining-room arrangements are more simple and the kitchen work reduced, as the individual mess kits are used and each man generally looks after his own. When the regular equipment is provided, small doughs should be handled freely and plenty of buns and rolls baked. When bacon constitutes a large part of the meat component, sufficient fat may be saved for use with the suet in frying fritters, crullers, doughnuts, etc., and for making pastries.

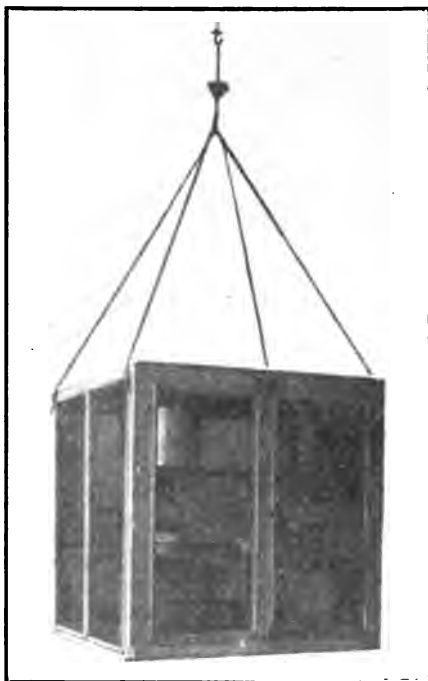
There must necessarily be a greater waste in camp than in garrison, and consequently an organization can not live as well on the straight ration. As stated before, the individual mess kits are generally used; each man approaches the issuing table and receives on the different parts of the mess kit the various components of the meal, taking as much as he wants. There is a general tendency to take away more than can be eaten, and consequently there is a great waste. Great care should be exercised to reduce this waste to a minimum.

The conveniences of a long-established camp gradually approach those of garrison, and where great care is exercised troops will fare much better on the same ration than others in garrison with indifferent supervision.

Flies are always a pest in a summer camp (or in the tropics) and a screened cage becomes almost a necessity. It is not issued and must be constructed at the expense of the company fund. Coal oil should be used freely about the refuse cans, to keep away the flies and destroy their larvae. Kitchens and dining rooms should be screened if possible and kept scrupulously neat. Table legs should be placed in cans of water when insects are troublesome.

⁽¹⁾From "Manual for Army Cooks," prepared by the Subsistence Department.

SWINGING CAGE.



Especially useful in the tropics, or in camp. It should be suspended in such a manner that a cup of oil placed as shown will prevent insects from reaching the cage.

Dimensions, about 3 feet square and 3 feet high.

It is not regularly supplied, and if provided must be constructed at the expense of the company fund.

FIELD MESS CHEST.



Epecially adapted for the use of troops on the march. It should be carried in the back end of an escort wagon and not removed when camp is reached. All of the smaller components of the ration required for daily use should be carried in the chest, which holds about 200 rations. All of the drawers should set in pigeonholes so that the boxes shall be very firm, the drawers slide easily, and the components not shake out and mix. The lid sets closely against the front of the drawers and prevents leakage and consequent mixture of the ingredients. When lowered the lid serves as a table for molding bread or for other kitchen use.

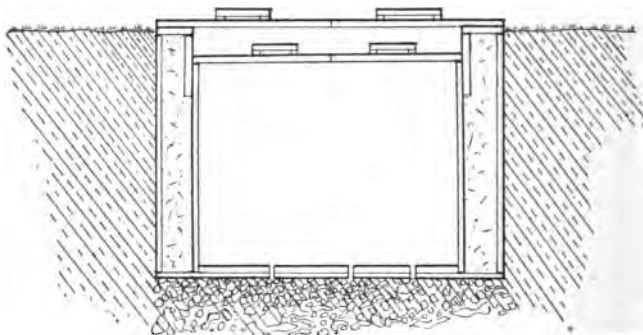
Dimensions, 3 feet 2 inches long, 2 feet 8 inches high, and 2 feet 8 inches deep. Strong rope or "field desk" handles should be placed on the sides. Constructed of pine and should weigh about 100 pounds.

It is not supplied to troops, and must be constructed at the expense of the company if desired.

A field mess chest, such as is illustrated, would be a great convenience here, as well as when transportation is sufficient for it to be carried on the march. It is not issued, but must be constructed at the expense of the company fund.

An ice box is often a great convenience, and may be constructed by simply setting a dry goods box inside of a larger one, preparing the necessary lids, and filling the space between the two boxes—say, 4 to 8 inches—with sawdust, gunny sacks, leaves, grass, hay, straw, etc. Or even better, a single box may be set in the ground and packed around with materials as noted above or with solid earth.

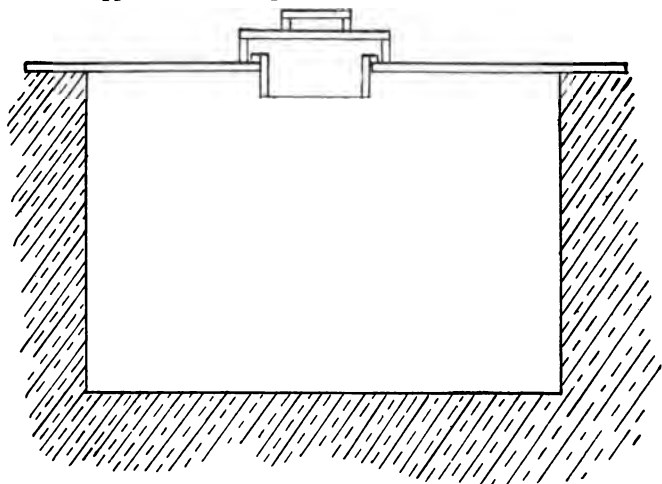
IMPROVED ICE BOX.



To provide a simple ice box for the field that will be thoroughly satisfactory, sink a packing box of suitable size into the ground and prepare a close-fitting cover in two parts, for convenience in handling. It is well to surround the box with heavy paper or with packed straw or grass to prevent dirt from falling in through the cracks. To provide drainage, bore several holes in the bottom of the box, and, if practicable, put a quantity of stone or gravel in the bottom of the pit before installing the box. If facilities are at hand, provide a double box as shown. It will be more cleanly and, on account of the double top, the ice will last longer.

PIT FOR SLOPS.

Frequently only the solid refuse from the kitchen can be carried away, and it is necessary to construct a pit for slops. It should be carefully covered and supplied with a trap door.



Whenever facilities are not provided for disposing of the kitchen waste, it becomes necessary to dig a pit. In short camps not likely to be used again, all kitchen

waste may be thrown into the pit, but in camps of longer duration it is necessary to strain all dish water, etc., through a box sieve suitably placed over the pit, and then to burn all solid matter in the range or incinerator. To darken the pit and keep it free from flies, make a solid board top, tamp with dirt and provide a detachable box sieve with cover, as shown. The pit should generally be about $2\frac{1}{2}$ feet wide, 5 feet long, and 4 feet deep when dug in clay. In more permeable soil, the dimensions may be somewhat reduced.

In temporary camp.—In a temporary camp, say, of from five to ten days, the cooking is very much the same as in permanent camp. Meals are served to the men in the same manner, and the same care must be exercised in the prevention of waste. In hot or wet weather a fly should be stretched over the range and the rations carefully

COMPANY INCINERATOR.



Dig two trenches 10 feet long and 10 or 12 inches wide, bisecting each other. At the point of bisection have the trenches from 15 to 18 inches deep, gradually shallowing up from this point to their several origins. Over the place of bisection place four boards to support an ordinary sugar or flour barrel. Around the barrel pile sods of earth up to the top of the barrel. Pack tightly. Make a fire in the trench under the barrel, which, upon being burned out, leaves a hard cone. According to the direction of the wind, leave one trench open and plug the other three openings near the cone with boards, turf, or loose soil. This gives a draft of air through the open trench and up through the cone, which acts as a flue.

If the soil is full of clay, the cone is easily made. If not it can be done in the manner shown in the illustration by using sods.

All the garbage of a company kitchen in the field can be easily disposed of by this means.

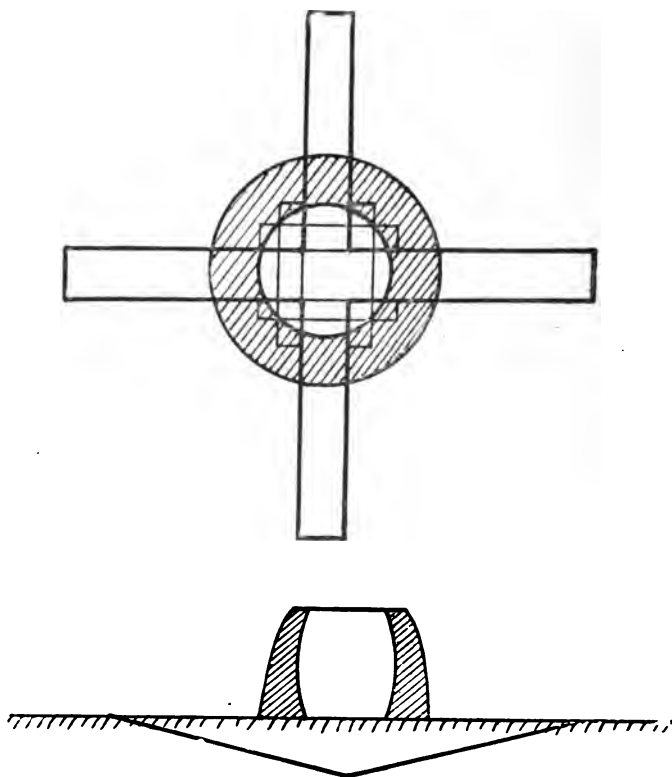
At the end of each day the ashes and tin cans should be raked out of the fire-place and a fresh fire started in the morning.

The fire is kept up by dropping fuel material down the cone, and garbage is fed to it in the same manner.

protected. Frequently the escort wagon in which the rations are carried may be used for the storage of mess supplies, and a tent fly should then be put up for the protection of the cooks and food before issue. When possible a wall tent and fly should be used in place of the arrangement just indicated.

Though not absolutely necessary where the range is supplied, an excavation should be made for protection to the fire of an open grate

PLAN AND CROSS SECTION OF COMPANY INCINERATOR.



used in windy weather. A pit 1 foot deep, with the additional protection afforded by the earth thrown up on the sides, will be ample.

On the march.—When first leaving the post or permanent camp, from one to three days' supply of fresh bread and such quantity of fresh meat as can be carried and kept from spoiling should be taken along. This will help out until the cooks get used to the new conditions, and will insure at least two good components for the meal. Thereafter canned goods and hard bread may be used to the greatest advantage; and, fortunately, troops in the field can now be issued canned corned beef, canned corned-beef hash, canned roast beef, canned tomatoes, jam, etc., all of excellent quality, nicely put up in suitable-sized cans and easily supplemented by other canned provisions from the commissary. Bacon, hard bread, and dried vegetables must of course generally be used, however, almost to the exclusion of the more bulky components when on the march.

Generally there is little time to prepare breakfast, and no attempt should be made to secure a great variety, but to have a few components, good and substantial, and plenty of coffee. Upon arrival in camp it is necessary to get a quick meal, as the men, having been hurried away in the morning, and probably having had a hard day's march, are hungry and tired; the idea is to get something ready quick. Suppose the command leaves camp at 6 a. m. It should generally arrive in camp between 12 and 2:30 p. m.; there should be three meals for the day, so a light lunch will suffice. Additional help should be gotten from the company to quickly get wood and water. The fire should be started at once and lunch should be ready to serve in thirty minutes. This will give plenty of time to prepare a good dinner, which should be served about 6:30 p. m.

Pack transportation.—When pack transportation is resorted to, the question of weight is of great importance, and nothing should be taken along that can be dispensed with. The range can be packed by placing the roaster on one side and the boiling plate, with utensils, on the other side, making a well-balanced load of about 200 pounds.

When even pack transportation can no longer be resorted to, the range will have to be abandoned and the utensils carried by the

cooks. The boilers, etc., have been especially designed with this purpose in view.

In choosing the rations to take when pack transportation is used, it is of course desirable to carry only those articles which have a great deal of nutriment and little weight in proportion. The following should form a large part of the ration: Bacon, canned corned beef, canned roast beef, hard bread, flour and baking powder, beans, dried peas, and dried fruits.

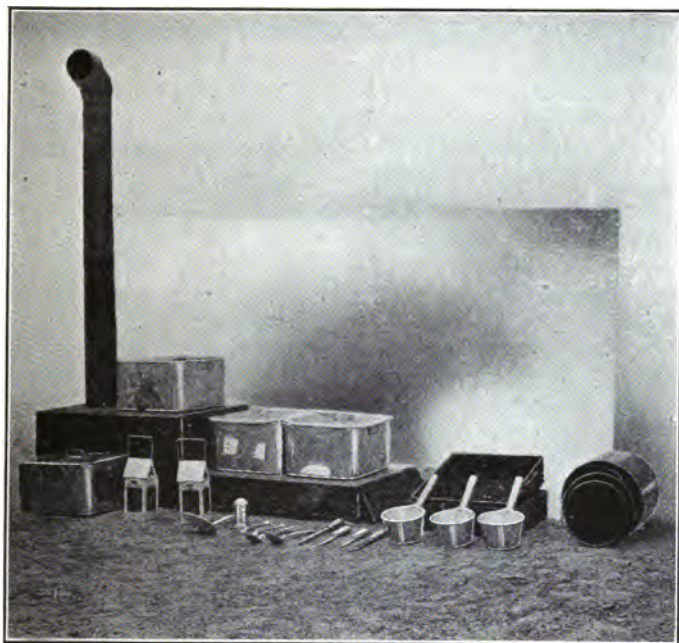
The packing boxes should be made of light material, not more than three-fourths of an inch in thickness, but trimmed at the corners with tin extending about 4 inches along the sides and ends; the cover should be attached with two light hinges. The boxes do not have to be especially strong, as they are wrapped in canvas before being packed on the mule; they should be about 2 feet 6 inches long, 1 foot 6 inches wide, and 1 foot 4 inches high.

Personnel.—The permanent personnel of the garrison mess (mess sergeant and cooks) should be supplemented by the addition of one man for general work about the kitchen in the field. It is suggested that the man performing the duties of dining room orderly in garrison be used for this purpose. In addition, a suitable detail (say from two to four men) will be made to get wood and water and to assist in establishing the kitchen.

The Army field ranges Nos. 1 and 2 are the only cooking devices now supplied to troops. The No. 1 range is issued to organizations of the size of a company of infantry or less, and the No. 2 range to detachments, officers' messes, etc., or added to the equipment of organizations larger than a company of infantry. The size of the No. 1 range is based upon the requirements of a company of infantry at war strength, as found by actual test, and the utensils supplied, while in good condition, are ample.

The range should be set up with the firing end toward the wind, and the sides should not be banked more than is necessary to seal the cracks where contact is made with the ground. Although a trench is not necessary, a slight excavation under the boiling plate will give a larger-sized fire box, and will generally prove more satisfactory. Articles brought to a boil on the boiling plate will continue to simmer when placed on top of the oven, and will keep sufficiently hot for issue

NEW ARMY FIELD RANGE.



when set on the ground with one side against the side of the oven or boiling plate, thus leaving the range free for other work.

TEN DAYS' BILL OF FARE FOR THE FIELD.

Assuming that field rations for ten days have been supplied, as indicated below, and the variety given is considered as unusually fortunate, the bills of fare cited are considered as appropriate and, in all respects, covered by the articles provided. It should be borne in mind that no savings can be made on the field ration, and hence it is assumed that no additional articles have been purchased.

Ten days' rations drawn as follows:

Meat Component:

- Fresh beef, five days.
- Bacon, three days.
- Corned beef, one day.
- Corned-beef hash, one day.

Bread: Probably two or three days' supply of soft bread taken when starting on march; two days' supply of hard bread, and the remainder in flour (with baking powder).

Dried vegetables:

- Beans, eight days.
- Rice, two days.

Fresh vegetables:

- Potatoes, six days.
- Onions, two days.
- Tomatoes, two days.

Other components:

- Jam, ten days.
- Coffee, eight days.
- Tea, two days.
- Sugar, ten days.
- Milk, ten days.
- Vinegar, five days.
- Pickles, five days.
- Salt, ten days.
- Pepper, ten days.

The milk is considered sufficient for the coffee.

Where bread is noted on the bill of fare, hard bread, soft bread, or biscuits are to be served, according to circumstances.

	Breakfast.	Lunch.	Supper.
1	Beef, Spanish. Lyonnaise potatoes. Bread. Coffee.	Corned beef. Cold tomatoes. Bread. Coffee.	Beef soup. Boiled beef. Boiled potatoes in jackets. Bread and coffee.
2	Baked beans and bacon. Onions and pickles. Bread and coffee.	Bacon. Boiled rice. Bread. Tea.	Beefsteak. Fried onions. Bread and jam. Coffee.
3	Beef stew. Bread. Coffee.	Cold boiled beef. Pickles. Bread. Coffee.	Roast beef and gravy. Boiled potatoes. Sliced onions. Bread and tea.
4	Beef hash. Bread. Coffee.	Fried bacon. Boiled potatoes. Bread. Tea.	Tomato soup. Boiled beef. Browned potatoes. Bread and coffee.
5	Baked beans and bacon. Sliced onions. Bread and coffee.	Cold beans and pickles and onions. Bread. Coffee.	Irish stew and dumplings. Bread. Tea.
6	Beefsteak. Baked potatoes. Bread and coffee.	Sliced cold corned beef. Blackberry jam. Bread and coffee.	Roast beef and gravy. Boiled potatoes. Bread and coffee.
7	Corned-beef hash. Pickles. Bread. Coffee.	Fried bacon. Cold tomatoes. Bread. Tea.	Bean soup. Boiled beef. Pickles and bread. Coffee.
8	Baked beans and bacon. Pickles. Bread and coffee.	Bacon. Rice pudding and jam. Bread. Coffee.	Beefsteak and gravy. Fried potatoes. Bread. Tea.
9	Corned-beef hash. Bread. Coffee.	Sliced cold corned beef. Cold tomatoes. Bread and coffee.	Beefsteak and gravy. Baked potatoes. Bread. Coffee.
10	Beef stew with dump- lings. Bread and jam. Coffee.	Fried bacon. Boiled potatoes. Fried onions. Bread and coffee.	Beef hash. Sliced onions. Bread. Coffee.

FIELD COOKING EXPEDIENTS.

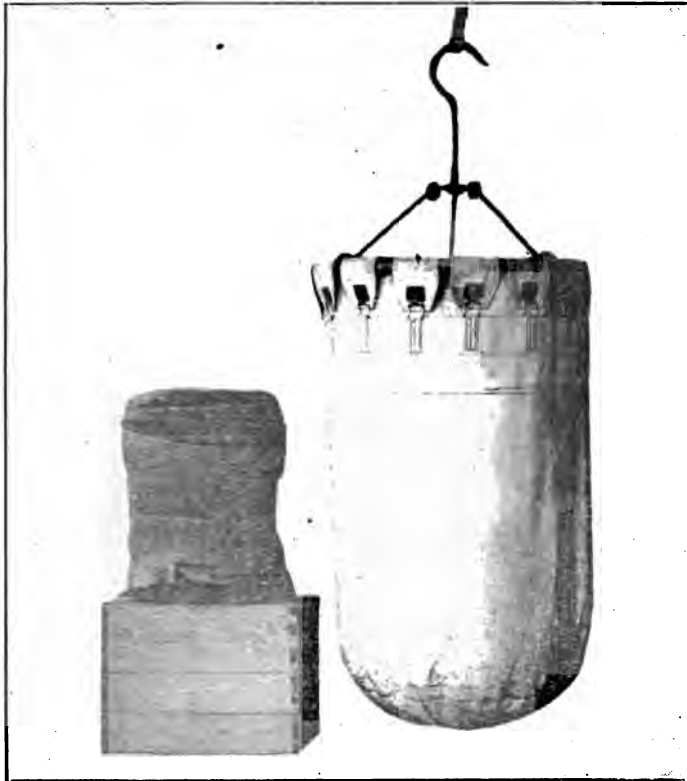
As before stated, it is intended that the field range shall be carried so long as wagon transportation is available. Thereafter, it may be carried on a pack mule, but if none is available, it will have to be abandoned, and the boilers and other utensils carried by the cooks. Ordinarily, thereafter, only boiling and frying can be done, unless clay ovens or dugouts are constructed. To utilize the boilers to the best advantage, an iron rack may sometimes be quickly constructed from materials at hand. In good soil, however, a narrow trench for the fire is about the most satisfactory device that can be used. It should be of such width that the boilers may be set across it. If available, green trunks of trees (say about 8 inches in diameter) may be laid parallel to each other at a suitable distance for supporting the boilers, the fire being built between them; or, similarly, rocks of suitable thickness may be arranged in a convenient manner for supporting the boilers above the fire to be built under them. If more time is available, an oven may be dug in a bank and vertical flues constructed, over which the boilers may be placed. After firing, the coals may be withdrawn and the baking done in the same chamber; or the dugout may be used for baking and roasting only, and the boiling otherwise provided for, so that all portions of the meal may be cooked at the same time. Attention is also invited to the open trench for baking, the clay oven above ground, and to the simple range made by covering a trench of suitable width with a bake pan or two for a boiling service, and utilizing two or more coffee cans, set end on, for a flue. Beans may be baked in dugout ovens, clay ovens, etc., such as are mentioned above, or in a vertical hole dug in the ground, in which a jar or kettle containing them may be set and packed about with coals and hot ashes, and suitably covered.

Improvised ice boxes and pits for slops have been considered in Chapter X.

To preserve fresh beef, hang is in as cool and shady a place as possible; keep dry, and well protected from flies. In moderately cool weather, this method of preservation is better than resorting to a damp ice box.

The fireless-cooker idea should be utilized whenever time and materials are at hand. Many things can be cooked in it to better ad-

WATER COOLING DEVICES.



On the left is shown a 10-gallon coffee boiler wrapped with wet burlap, or grain sacks. On the right is a canvas bag containing fresh water. In each case the water in the receptacles is kept cool by evaporation, and hence the receptacles should be placed in a draught if possible.

vantage than in a range; and, incidentally there is a great saving of fuel. Ordinarily, boilers and packing boxes, with hay, paper, sawdust, or gunny sacks as filling, may be used with excellent results.

It may frequently be desirable to improvise a simple filter in the field for the purpose of clarifying drinking water for the troops, and rendering it more palatable. Such filters are generally constructed by setting a barrel, or keg within a larger receptacle—a box or barrel, as

IMPROVISED FIELD OVENS.



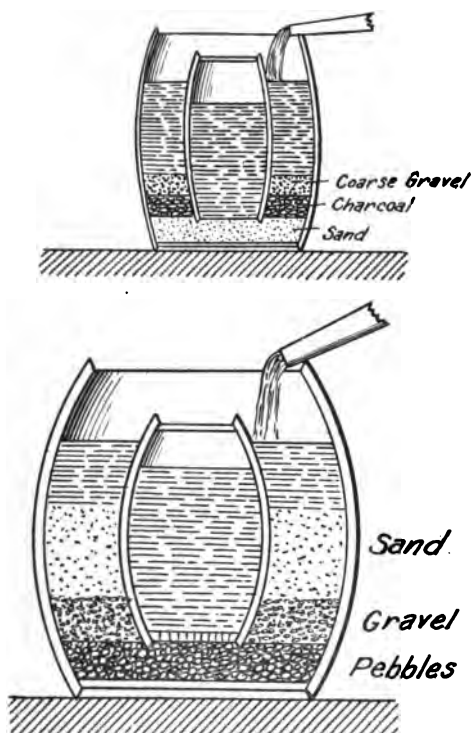
On the left is shown a mud oven resulting from molding sand over two barrels placed end-on, the mold thus formed being covered with about 6 inches of clay, into which hay or straw has been chopped. The oven was then allowed to bake in the sun for about two days and then dried out by a slow fire.

In the bank are seen two simple ovens constructed and used for baking the same day. In both cases a fire is built in the oven two or three hours before baking; the coals are then withdrawn and the baking begun when the temperature of the oven is sufficiently reduced.

On the right is seen a mud range constructed in the same manner as the oven first described, except that suitable holes are left in the top for the escape of gases for boiling. A mud chimney should be constructed if time is available.

After the vegetables, soup, coffee, etc., are prepared the fire may be withdrawn and baking or roasting done, as in the barrel oven.

IMPROVED FILTER.



shown in the illustrations—and allowing the water to pass through successive layers of sand, gravel and pebbles, or charcoal; thence through the holes in the bottom of the inner receptacle to the containing reservoir. By this process disease-bearing germs are not removed, and should the water come from a doubtful source, it should be boiled (and aerated if practicable) before using.

The filter should be cleaned every day or two and the upper layers of sand thoroughly washed or replaced. Otherwise, the filter becomes a dangerous breeding place for disease-bearing germs, rendering its use more detrimental than beneficial to the troops.

FIRELESS COOKERS.

The "fireless cooker" may be defined as a device constructed for the reception of hot food or for the hot articles from which it is being prepared. It consists essentially of such nonconducting materials as may be necessary to maintain the food at a proper temperature for cooking for a number of hours.

It is generally a box-like arrangement, lined with a nonconducting material, within which is the "well" or reservoir, into which the

EXPERIMENTAL FIRELESS COOKER ISSUED BY THE SUBSISTENCE DEPARTMENT.



It will provide about 9 gallons each of two components of a meal and may frequently be used to advantage in garrison and in the field whenever transportation is available.

vessel containing the hot soup, coffee, meats, vegetables, etc., is placed.

Many different makes of fireless cookers are found on the market, and various materials—asbestos, paper, felt, hay, indurated fiber, etc.—are used as nonconductors. In some types heated soapstones are placed in the “well” to keep the food at a cooking temperature for long periods, or to actually supply the heat ordinarily given to the food by placing it upon the range or within an oven.

Generally during the ordinary process of cooking a certain amount of heat is continuously applied to the vessel containing the food and after it has attained a certain temperature the heat required is but little more than sufficient to replace that lost by radiation, evaporation, etc. To cook food simply requires the application of a certain amount of heat at a temperature between 130° and 385° F. (in the case of fireless cookers, between 130° and 212° F.), though the lower the temperature the longer the process will be.

IMPROVISED FIRELESS COOKER.



This cooker consists of an ordinary ash can or water can for receiving a milk can, or such a boiler as is represented. Hay or straw is generally used for packing. Upon arrival in camp the large cans are used as receptacles for water and the smaller ones for cooking.

The object of the fireless cooker is simply to prevent the loss of heat from food containing a sufficient number of heat units above 130° F. to cook it, thus effecting a great saving of fuel, and incidentally rendering it unnecessary for one to give his constant attention to the food being cooked. Furthermore, some articles are actually better when prepared in a fireless cooker, e. g., tough meats, that are ordinarily improperly cooked by any quick process, are rendered more tender and palatable by the long, slow process required when the fireless cooker is used.

To prepare food for the fireless cooker, the general idea is to place it on the range until the articles to be cooked are heated through, or have taken up such an amount of heat that when transferred to the cooker they will contain within themselves sufficient heat to complete the process. By experience, the following times of cooking, etc., have been ascertained:

Articles of food.	Number of minutes at boiling point before putting in cooker.	Number of hours in the fireless cooker.
Beef à la creole	45	6
Beef à la mode	45	3
Beef, corned	45	3
Beef, curry of	20	3
Beef, roast, soft	45	3
Beef, Spanish	20	3
Beef, Turkish	20	3
Beans, Boston baked	60	12
Beans, Lima	45	3
Beans, kidney	90	6
Beans, string, green	30	2
Cabbage, with bacon	20	3
Cabbage, Bavarian	20	3
Cabbage, with fresh pork	45	3
Carrots, boiled	20	3
Chicken à la creole	45	6
Chicken, curry of	45	4
Chili con carne	30	3
Codfish, creamed	15	2
Ham, boiled	45	4
Mutton stew	20	4
Parsnips	30	3
Pork, fresh, boiled	60	4
Potatoes, Irish	15	2
Potatoes, sweet	20	2
Sauerkraut, with bacon or salt pork	45	3
Succotash	20	3
Tomatoes, stewed	20	1
Turnips, boiled	60	3

NOTE.—Meats should not be cooked in pieces weighing more than from 3 to 5 pounds.

To get the best results, most articles of food to be cooked should be covered with liquid when put into the cooker.

Such vegetables as potatoes, parsnips, etc., should be about half cooked before putting in the cooker, the water drained off, and the tubers or roots allowed to finish cooking with the retained heat. Such articles should preferably remain in the cooker for a few hours only.

A considerable amount of acid is found in tomatoes, and dishes containing them in quantity should not be permitted to remain in the fireless cooker or other tin receptacle for longer than four or five hours.

Tea and coffee should be prepared in the utensils provided, and the tea leaves or coffee grounds (which should have been tied loosely in a sack) should be removed before setting the same in the cooker.

To get the best results the vessels should be well filled, and where two or more "wells" are provided all should be used if practicable.

MESSING ON RAILROAD TRAINS.

Standard kitchen car.—This is a remodeled tourist sleeper, designed to cook for a battalion (peace strength) from two to five days or longer, and to carry 42 men. Only limited facilities are provided for cold storage and for the storage of nonperishable articles, so that the bulk of the food supplies must be carried in a baggage car. For this reason, arrangements should always be made to have a portion of a baggage car, say from one-third to one-half, allotted for this purpose, and in making up the train this portion of the baggage car should be placed next to the kitchen. The garrison ration will be issued, and a considerable saving should be made from the credit allowance on beef, beans, dried fruits, sugar, sirup, flavoring extracts, etc., and canned meats, canned vegetables, and canned fruits purchased with the savings made.

An officer will be detailed by the commanding officer of the troops entrained to take charge of the messing arrangements, and he will be assisted by a mess sergeant. The mess officer will designate the hours for meals and the manner in which they are to be served, and make requests for the necessary details for kitchen police and waiters. Generally one or two cooks will be provided by the Pullman Company, and the Company cooks should be detailed to render them the necessary assistance and to perform the duties of kitchen police.

For serving the meal, the company mess sergeant and one man

for each article on the bill of fare should report from each company. The serving of the meal will not begin until everything is ready. The details will then be called up in order, and the quantities due each organization having been determined, the troops farthest from the kitchen will be served first.

The following bills of fare are considered appropriate:

	Breakfast.	Dinner.	Supper.
1	Link sausages. Fried potatoes. Bread and butter. Coffee.	Corned beef and cabbage. Pickles. Bread. Coffee.	Vegetable Soup. Boiled beef. Potatoes. Bread and butter.
2	Beefsteak. Baked potatoes. Gravy. Bread. Coffee.	Vegetable soup. Roast beef. Stewed tomatoes. Browned potatoes. Bread and butter. Coffee.	Bacon. Fried potatoes. Bread and butter. Coffee.
3	Bacon and eggs. Fried potatoes. Bread. Coffee.	Corned beef and cabbage. Sliced onions. Bread. Coffee.	Vegetable soup. Beefsteak. Browned potatoes. Bread and butter. Coffee.

Detachment kitchen car.—This car is designed, first, for journeys where the number of men and the distance do not warrant the use of the standard kitchen car, and, second, for long journeys (forty-eight hours or more) for 30 men or less.

The car is provided with a gas range attached to the Pintsch gas tanks, and will cook for as many men as can be carried on the car. There is no ice box or refrigerator on this car, and consequently fresh beef can not generally be carried for more than two meals, unless the weather is such that the meat may be carried in sacking on the platform. Travel rations and fresh bread for 30 men for five days can be carried in the locker and vacant section in the car, and, if the detachment is without an experienced cook, travel rations should be carried, and coffee made under the direction of the officer or noncommissioned officer in charge. On short journeys, where an experienced cook is available, the garrison ration should be provided.

The following bills of fare are considered appropriate:

	Breakfast.	Lunch.	Supper.
1	Beefsteak and gravy. Boiled potatoes. Apricots. Bread and coffee.	Baked beans. Blackberry jam. Bread and butter. Coffee.	Beef stew. Bread and butter. Coffee.
2	Cold sliced corned beef. Boiled potatoes and gravy. Canned peaches. Bread and coffee.	Cold sliced corned beef. Canned peas. Bread. Coffee.	Beefsteak. Boiled potatoes. Bread and jam. Coffee.

Pintsch gas cooker.—This cooker is designed for the use of troops traveling in any type of car equipped with the Pintsch gas-lighting system, and practical experience has shown that sufficient gas is generally available for all cooking to be done. It has sufficient capacity for cooking for 48 men (the maximum number carried in one car) and supplies two hot components of the meal—as, for example, hot coffee and stewed corn—although but one article can be cooked at a time. One cooker is supplied with each car and contains ample utensils for cooking and serving the food, though the individual mess kits must be carried.

Directions for use.—In setting up the gas cooker the work should be supervised by a commissioned officer. If none is present, then by the noncommissioned officer in charge.

(a) Set burner and stand in men's wash room or other suitable place and connect same with the nearest four-tipped burner, as follows:

(b) Remove glass bowl and turn over to porter. Unscrew 4-flame cluster, being careful not to unscrew the cluster stem. Screw short pieces of gas tubing to cluster stem where 4-cluster flame was removed by the coupling at one end of the tubing. Then attach long piece of tubing to short piece and connect with the burner of the cooker. After the meal has been prepared disconnect long piece of tubing and allow end to remain attached to the cluster stem. When it is desired to operate the cooker, connect long piece of tubing to short piece.

If it is not practicable to make connections with a 4-flame cluster, connect burner of cooker with a 1-burner bracket lamp, as follows:

With pliers remove gas tip and loosen the governing screw so as to insure a free flow of gas.

If the governing screw sticks, tap lightly with the handle of the screw-driver until it can be easily removed. Do not entirely unscrew the governing screw. Slip rubber end of tubing over pillar and connect other end to the burner of the cooker.

(c) The connections having been made, turn on the gas at the lamp and burner of the cooker and light with a wax taper. The greatest heat is obtained by having a strong blue flame.

(d) The burner being lighted, set on the largest copper boiler if it is desired to make coffee. The boiler should be filled about two-thirds full, additional water being added when the coffee has come to a boil.

After coffee has been made remove and set boiler on one of the asbestos mats, to prevent damage to the floor of the car. The second boiler is then set on the burner, with such food as may be desired to cook. Water must be added to prevent burning of food and melting the boilers. Stirring is also necessary when preparing certain foods.

It requires about one hour and twenty minutes to prepare coffee and cook one hot dish for 48 men.

After the meal is prepared set the galvanized-iron boiler on the burner and heat the necessary water for washing the mess kits and utensils.

Caution.—(a) Do not put boilers on without water in them.

(b) Always add a little water, about 1 quart to every 10 pounds of food, to prevent burning.

(c) Remove the coffee and hot water from the copper vessels as soon as practicable, to preserve the tinning inside.

(d) Look at the gas flame occasionally, to see that it has not blown out.

(e) To reduce gas consumption and save time, get hot water for washing dishes from the locomotive.

(f) Never light the gas with boiler set on heater.

(g) If the roadbed is rough and there is considerable motion to the train, secure the stand and burner by the two leather straps furnished with the cooker. To prevent the splashing of water when coffee is made or water being heated, place round slop board in the boilers so as to counteract the motion of the car.

(h) In case of leaks in the gas tubing, cut at leak with sharp knife and connect the two pieces of tubing with a coupler, wrapping ends of tubing with wire.

(i) Handle the equipment intelligently and carefully. Never pack any article unless clean and dry. When returned to a depot or post, the equipment should be completely overhauled, cleaned, and tested.

The garrison ration will be used when the cooker is provided, and it is recommended that articles be purchased from the credit allowance as follows:

- Beef, corned, canned.
- Hash, corned beef.
- Salmon, canned.
- Potatoes, about one-third of allowance.
- Soft bread.
- Hard bread.
- Tomatoes.
- Jam.
- Coffee, roasted and ground.
- Tea.
- Sugar.
- Milk, evaporated.
- Pickles.
- Salt.
- Pepper.
- Butter.
- Sirup.
- Soap.

A quantity of canned baked beans should be purchased, as they can be readily heated by the cooker and the dried beans can not be cooked en route. If the journey is an extended one, fresh onions may be purchased; also a small quantity of bacon.

On account of the limited space available for cooking, it is not desirable to prepare elaborate meals, but the fare can be much improved by purchasing extra articles of food from the company fund.

The following is a list of a few articles of food which can be utilized when preparing meals with the gas cooker:

- Beans, stringless, canned.
- Beef stew, canned.

Chocolate.
 Cocoa.
 Corn, canned.
 Eggs, fresh.
 Frankfurter sausage, canned or fresh.
 Fruit, fresh.
 Hominy, canned.
 Peas, canned.
 Plum pudding, canned.
 Sauerkraut, canned.
 Soups, canned.
 Vienna sausage, canned or fresh.

The following are sample bills of fare for two days when using the Pintsch gas cooker:

FIRST DAY.

Breakfast:
 Hot corned-beef hash.
 Soft bread and butter.
 Coffee.
 Dinner:
 Cold corned beef.
 Hot baked beans.
 Soft bread.
 Pickles.
 Coffee.
 Supper:
 Cold meat (boiled ham or roast beef
 cooked before starting on journey.)
 Stewed tomatoes.
 Soft bread and jam.
 Tea.

SECOND DAY.

Breakfast:
 Hot baked beans.
 Soft bread and butter.
 Coffee.
 Dinner:
 Cold meats.
 Stewed tomatoes and corn.
 Soft bread.
 Tea.
 Supper:
 Hot corned-beef hash.
 Soft bread.
 Coffee.
 Sirup.

Field bread.—Field bread is a term applied to a type of fresh bread with thick crust, made to withstand long transportation and keep for a period of from ten days to two weeks, or longer, depending on the weather conditions. It is intended for supply to troops separated from bakeries.

Recipe No. 1.

100 pounds flour (issue) sifted,
 52 pounds water,
 1½ pounds dried yeast,
 3 pounds sugar,
 1½ pounds salt.

Make a straight dough by first mixing the yeast (which has been softened in water), sugar, and salt in the water of about 85 degrees Fahrenheit temperature; then putting in the flour, saving about 2

pounds for dusting. This will make a stiff dough and should be kneaded well. Set to rise in a temperature of about 88 degrees Fahrenheit. The dough should be ready to punch down in about 6 hours. Punch down once and let rise again for about one-half hour and then put out on the bench. Knead well for about 20 or 25 minutes. Scale at 2 pounds and $3\frac{1}{2}$ ounces (or whatever weight may be decided upon), round up, and let prove 20 minutes on the bench. Mould into round flat loaves of about 1 inch thickness. Set to prove in pans so that the loaves will not touch when at full proof. Let prove for about 1 hour and 15 minutes, temperature about 90 degrees Fahrenheit. When ready to go into the oven the loaves may be slashed crosswise with a sharp knife or punctured with pins, thus permitting the escape of a portion of the gas.

Bake in suitable pans in an 18-count oven for 1 hour.

Recipe No. 2.

150 pounds flour (issue) hard wheat,
10 gallons water,
30 ounces dried yeast,
30 ounces sugar,
30 ounces salt.

Have flour, water, and bakery at an average temperature of 80 degrees Fahrenheit. Make a straight dough. First mix softened yeast, water, sugar, and salt, then work in 143 pounds flour. Dough to be well worked. Save 2 pounds flour for dusting. Let stand 10 hours. Knead well and work in 5 pounds flour. Let stand for 1 hour.

Scale for 2-pound loaves.

Mould into long narrow loaves about $1\frac{1}{2}$ inches thick. Prove 15 minutes. Slash once lengthwise. Two loaves to a pan. Bake in oven at 500 degrees.

To refreshen field bread.

After the crumb of the bread has become hard and dry through long keeping it may be refreshed by wrapping with two layers of very wet cloths and reheating in a very slow oven for 30 minutes. While refreshing it water should be sprinkled on the cloths and the reheating continued so long as the loaf resists ordinary squeezing pressure in the hands. If too much water has been added, remove the cloths and dry the loaves well before removing from the oven. (Cir. 5, Office Commissary General, May 4, 1911).

CHAPTER XI

FIELD BAKING AND FIELD BAKERY EQUIPMENT⁽¹⁾

Equipment.—The proper equipment for field bakeries, as determined by experiment and practical experience, is announced from time to time in circulars from the office of the Commissary-General. It is based upon the requirements of a regiment of infantry, with a view to combining two or more regimental bakery equipments to form a bakery for a brigade or division. Detached battalions should draw bread from the nearest bakery.

The authorized equipment for a regimental field bakery is given in the Subsistence Manual.

A field bakery should be established and operated in connection with every post bakery in order that bakers may become thoroughly familiar with the field equipment and confident of success when required to use the same.

System used.—The straight dough system should be used in the field as a saving of time and labor. If using the intermittent type of oven, the doughs should be set so as to follow each other at a period of about two hours and a half if baking double rations, and two hours if baking single rations.

This will allow three-fourths of an hour for firing and one-half hour for equalizing temperature. This has been found to be sufficient for each firing after the first, for which one hour and a half should be allowed. While using this equipment from three to four runs of bread will have to be made daily.

Straight fire knockdown field oven.—In this kind of an oven a jacket of earth forms an essential part, and the baking properties depends largely upon the heat absorbing and radiating capacity of the materials used. If the soil is sandy, the jacket of earth may be dried out in a few hours and good results obtained, but if the soil is of clay and permeated with moisture, it will take much longer to

⁽¹⁾From "Manual for Army Bakers," prepared by the Subsistence Department.

get satisfactory results; especially is it difficult to get a good browning on the bottom of the loaves until the oven has been used for several days. Wet clay can not take up and radiate heat of a sufficiently high temperature for baking. This temperature should not be below 385° F.

The ovens here referred to are called "straight fire" or "draw fire" for the reason that the fire is built in the oven chamber, and is drawn when the oven has been sufficiently heated for baking. The amount of fuel to be used can be so regulated by experience that there will be few coals remaining to be withdrawn when the oven is ready for use. The fire being withdrawn, the oven should be closed up tightly for an hour or more to equalize the temperature throughout. The oven is then ready to receive the loaves, and care should be exercised to have it in readiness when they are sufficiently proved.

Great care should be exercised in firing these ovens. *Intense heat must be avoided*, as it will ruin an oven in a few weeks. A slow fire for an hour to an hour and a half produces best results, and an oven so fired has been used almost continuously for fifteen months, while others heavily fired have been ruined in one month.

As a substitute for a proof box, the mixing tent will have to be maintained at about 80° F., and a suitable proof rack constructed from materials at hand.

Size of loaf to bake in field oven.—There are certain dimensions that go to make up a well proportioned loaf. For instance, a single ration loaf about 12 inches long should be about 3 inches wide and from 3½ to 4 inches high, while a 2-ration loaf of the same length should be about 4 inches wide and from 5 to 6 inches high, the height of the loaves depending upon the proof that is given them and the temperature of baking.

It takes a certain amount of heat, about 385° F., to bake one ration of bread, and under the same conditions it would take about twice as much heat to bake two rations or a 2-ration loaf. Suppose that the capacity of the oven is 84 single rations of the dimensions given and that the heat developed is just about sufficient to bake them. It is at once apparent that there may not be enough heat to bake the full number of double rations that may be placed in the oven. In

the first instance we may consider that sufficient heat has to be stored up to bake a sheet of dough about $3\frac{1}{2}$ inches deep, and in the second a sheet of dough about 6 inches deep, and the number of heat units and the time required will be about in the same proportion. From experience we find that a 2-ration loaf taken from the oven at the time a single ration is baked will be underdone—a portion through the center being a mass of dough. If such loaves are returned to the oven and are left in a temperature much less than about 350° , they will be subjected to a drying-out process rather than to a baking heat, and the resulting loaf will have a thick, dry crust and a soggy interior. Hence, we see that in this particular case it would have been *safer to have baked single rations than double ones*. It is evident that the only way in which the heat of the oven can be increased is by re-firing.

On the other hand, *if the oven is too hot* and not carefully managed, a 2-ration loaf is apt to be burned on both the top and bottom while a single-ration loaf might be baked without burning, being subjected to this intense heat for only about half as long a time.

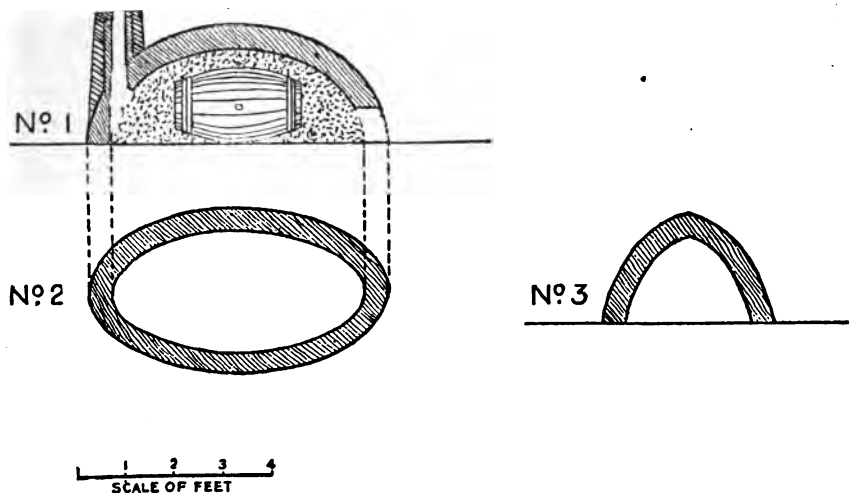
Single rations of the dimensions given should be baked in from twenty-five to fifty minutes and *double rations* in from fifty minutes to one hour and twenty minutes.

It is evident that *if single rations be crowded* in a pan we soon approach the difficulties met with in baking a double ration and at the same time we get a loaf of awkward and irregular outlines. On the other hand, *if 2-ration loaves are allowed to spread out* until they have about the same thickness as single rations, they can be baked with the same facility.

In any case *great care must be exercised while baking in a straight fire field oven*, as the amount of heat is variable and not easily judged; therefore the door should be left slightly ajar from the time the loaves are placed in the oven until they are browned, and looked at frequently to see that they are not burning. They should be brown in about fifteen minutes and then the door may be closed, and the baking proceed with less attention. One shifting at least will generally be necessary, and care should be exercised not to jar the pans at this time, for the framework of the loaf is not yet formed throughout and if the crumb falls away from the crust it will not be restored and the bread will be heavy.

It is recommended that single rations be baked until great facility is acquired in handling the oven.

An Oven above ground



EXTEMPORIZED OVEN BUILT ON LEVEL GROUND.

No. 1.—Longitudinal section, showing method of construction. No. 2.—Plan. No. 3.—Transverse section at centre of dome.

To build such an oven a rounded heap of dry earth or sand, about 5 feet long, 2 feet 6 inches wide, and 1 foot 9 inches high, should be raised. This is the mold on which the oven is to be formed. Sand is more suitable for the mold than earth, it being more readily removed. Willow twigs bent over and closely wattled together, or a flour barrel laid flat and covered completely with earth, will likewise suffice to give form to the mold. Mix a stiff mud or mortar, and plaster the mold over 5 or 6 inches thick, commencing at the base. Allow one or two days for it to dry and harden, plastering up all cracks which may appear. When nearly dry, cut out the door at one end and the flue at the top of the other end. A small mud chimney raised over the flue will greatly improve the draft. Carefully withdraw the loose earth or sand from the interior. If a barrel has been used for the mold it may be burned out without damaging the oven. Keep a small fire in the oven for at least half a day before attempting to bake. Dig a pit in front of the oven for the convenience of the baker.

Two men can build this oven in three hours, but it will generally not be fit for use for two days. It will last several weeks, and prove very satisfactory.

This oven may also be built dome-shaped, like the household ovens used by the Mexicans. This kind of an arch would be stronger than the semicylindrical form, but with the same quality of material used would not have as great a baking capacity.

The clay oven is peculiarly adapted for use when camping on swampy ground. Under such circumstances it may be constructed upon a platform of stones or logs covered with clay.

FIELD-BAKING EXPEDIENTS.

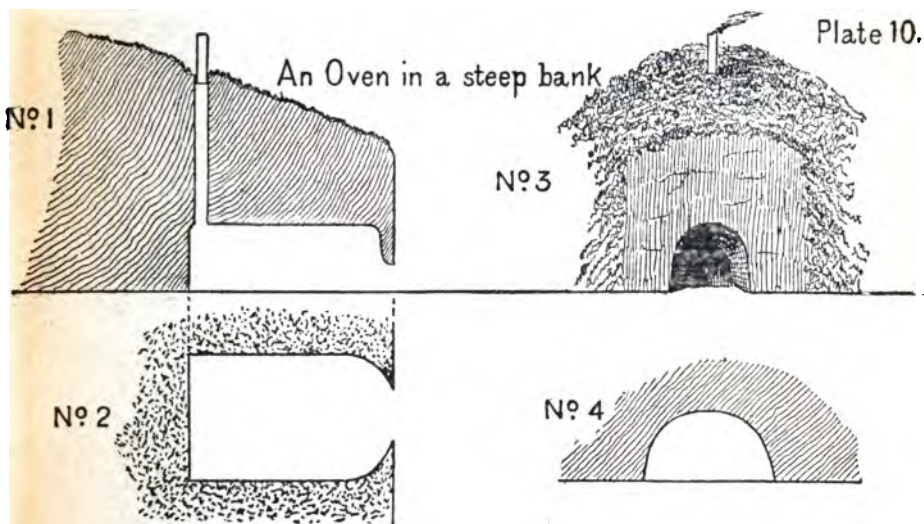
Essential principles. Occasions are sure to arise when it is desirable to bake bread in the field when no proper baking equipment or no equipment at all is provided. Under these circumstances the essential principles to be followed in the construction of earth or clay ovens must be thoroughly understood, as well as the methods to be followed in preparing and preserving yeasts and proving the sponge and dough.

Ovens. The entire principle of baking is based upon the fact that for each ration of bread baked a certain number of heat units must be provided at a temperature from about 385° F. to 450° F., striking the top and bottom of the loaf with about the same intensity. The *quantity* of the heat available must be such that a baking temperature will be maintained from thirty minutes to an hour and a half, depending upon the depth of the dough to be baked.

Such ovens as are generally constructed in the field must generally be of the simplest type possible—that is, of a single chamber in which the fire is built and withdrawn after sufficient heat has been stored up in the surrounding material to do the necessary baking. Such ovens are generally called “straight-fire” or “draw-fire” ovens, and for temporary use are very satisfactory, though they are more laborious to handle than continuous ovens. In the construction of these ovens the following points should be kept in mind:

1. *The oven must be built of material suitable for absorbing and radiating* the heat required in baking. Brick, rock, adobe, clay, sods, sand, and loamy soil will all do if properly handled.
2. *About 8 inches of earth* of any kind is required to take up and radiate sufficient heat for baking even small batches of bread. A greater depth on top of an oven will cause premature breaking—a lesser amount would not generally retain sufficient heat.
3. *A slow fire must be placed in the oven* in order that the heat may gradually be taken up in the surrounding material. A flash heat will quickly heat up the inner lining of the oven and produce an intense heat for a short time, but to store up a sufficient amount of heat requires a long, slow firing.
4. *The greatest difficulty is in getting a bake on the bottom of the loaves* in newly constructed ovens, as the heat from the fire rises from the bottom, which is further protected by the ashes as they accumulate. Es-

EXTEMPORIZED OVEN BUILT IN A BANK.



No. 1.—Longitudinal section. No. 2.—Plan. No. 3.—Front view; not on the scale.
No. 4.—Transverse section of interior.

This is recommended as a very good and convenient oven. A bank from 4 to 6 feet high is the best for the purpose. The roof covering need not exceed $1\frac{1}{2}$ feet. Two men with a spade and a long-handled shovel can build it, in light soil, in three-quarters of an hour. If such tools are not available, it may be constructed with trowel, bayonet, intrenching tools, or even with knives. To build the oven, dig down the bank to a vertical face and excavate at the base a hole from 4 to 5 feet horizontally, care being taken to keep the entrance as small as possible; hollow out the sides of the excavation and arch the roof until the floor is about 2 feet 6 inches in its widest part and the roof 16 inches high in the center of the arch. Then tap the back end for the flue. A hole from 4 to 6 inches in diameter will furnish a good draft. A piece of tent stove pipe may be utilized for this purpose. When difficult of construction, the flue may be omitted, and practically as good results will be obtained. The time required for drying will depend upon the character of the soil; if ordinarily dry, a fire kept up for an hour will suffice.

After the oven has been heated the temperature may be regulated by means of the door and flue—opening or closing them as may be necessary.

pecially in damp and loamy soils should a hearth of stone or brick be provided to overcome this difficulty.

5. *Soil while damp* can not take up and radiate sufficient heat between 385° and 480° F. to bake bread. Hence the material immediately surrounding an oven must be thoroughly dried out before any attempt is made to bake. Generally a "slow" fire for several hours will be necessary before the first baking can be made, but after a successful baking not more than three-fourths of an hour to an hour will be required for heating the oven and equalizing the temperature by tightly closing up the oven after the fire is drawn.

6. *The temperature is best determined by inserting the arm well back into the oven chamber* and holding it there as long as possible, count-

BAKING IN THE OPEN TRENCH.



A trench about 6 feet long and 15 inches wide and about 1 foot deep. A fire is built in the trench about two hours before the time to bake. A few minutes before the loaves are ready the coals are withdrawn and the trench swept clean. The loaves (Vienna-shaped and very dry on the exterior) are carefully laid in the trench about 1 inch apart, covered with an iron sheet of any kind, and the coals, which were drawn from the trench, distributed over the top. By carefully watching the bread and regulating the top heat most excellent bread can be produced, and in an oven of the dimensions given 25 rations (single) can be baked.

ing seconds. For a new oven about 12 counts (second counts) will be about right, as a little moisture is still present, or the surrounding material is not dried to as great a depth as in later bakings, and hence the first heat should be a little stronger. Later on 15 or 16 counts will be the right number.

Proving the sponge and dough. In order that the sponge and dough may prove satisfactorily there must be a uniform temperature of about 80° F., and the same may be said of the loaves while proving in the pan. Small sponges and doughs may be proved in a *fireless cooker*, if they are of the proper temperature when put in. Following the same idea a *small pit* may be dug in the ground and heated with hot bricks that are withdrawn before the receptacle containing the dough is introduced. After the sponge or dough is put in the pit provided, it should be covered tightly to retain the heat and keep it warm. Remember that while the

DOUBLE-BARREL OVEN.



Made by placing two sugar barrels end-on and covering with about 2 inches of wet sand and 4 inches of common clay mixed with straw or hay. The oven is let stand a couple of days and then dried out by a slow fire. Thereafter it is used, as explained, for straight-fire knockdown oven and with equally good or better results. Capacity, 80 rations.

sponge or dough is proving a certain amount of heat is being generated as a result of fermentation (working of the yeast) and this will generally offset the loss when the fireless-cooker or pit method is used. More satisfactory still would be a *small cave or closet* covered with earth, large enough to put in shelving for the pans of loaves. The cave or closet should be heated with bricks or hot water and the door should be as small as practicable.. In mild weather a *box with shelves*, or a *rack closely covered with canvas* and heated as above indicated will prove satisfactory. *Greased paper* spread over the loaves in a pan will do much to retain the heat generated, but this alone will not be sufficient in cold weather.

Preparation and preservation of yeasts. Material for the preparation of yeasts according to some one of the formulas below will generally be at hand, and if yeasts are not procurable on the market, they should be prepared.

For the preservation of yeast it will generally be sufficient in either warm or cold weather to utilize the *fireless-cooker* or *pit* idea, being careful to get a proper temperature for the receptacle and then to maintain it by nonconductors. To preserve yeast in hot weather, a pit should be dug in moist soil or in a constantly shady spot and the receptacle for the yeast should be surrounded with damp gunnysacks.

RECIPES.

Head yeast (maiden yeast or virgin yeast). Ingredients (6 quarts). 5 quarts of water; $\frac{1}{2}$ ounce fresh hops; 10 ounces malt; $1\frac{1}{4}$ pounds of flour.

Put the water on the stove; add the hops, and boil for about eight or ten minutes. This preparation is known as "hop tea." Mix the dry flour and malt together in a keg or other suitable receptacle; add sufficient boiling-hot "hop tea" to make a medium thick paste and mix well. Strain the remainder of the "hop tea" into a separate jar or keg and set both aside until they have cooled to about 80° or 90° F., then pour the "hop tea" into the flour and malt mixture. Set in a warm, even temperature; in about twenty-four hours spontaneous fermentation will have set up and foam will be seen to gather on the surface, a deep light scum will rise and a strong beer odor will be present. In about forty-eight hours the scum will begin to settle and soon thereafter will disappear from the surface of the liquid. The yeast is ready for use as

soon as it begins to settle. It should now be set in a cool place, where it will keep from eight to ten days.

Head yeast is developed spontaneously from *wild yeast* (that is, yeast spores found floating about in the air) and is generally prepared only as a starter for a stronger yeast. It may, however, be used directly in the dough or sponge the same as stock yeast. If other yeasts are at hand there is no necessity for its preparation. It is possible to get good results by omitting the hops and malt, but in case they are omitted about $1\frac{1}{2}$ ounces of sugar and 1 ounce of salt per gallon of water should be added.

Stock yeast (or flour yeast). *Ingredients* (7 gallons): 5 gallons of water; 2 ounces of fresh hops; $2\frac{1}{2}$ pounds of malt; 5 pounds of flour; 3 quarts of head yeast.

Prepared in exactly the same manner as head yeast, except that the mixture is stocked (head yeast is added) when the cooled hop tea is added to the flour and malt mixture. On account of having the head yeast as a starter, this preparation will begin to ferment at once and it will be ready for use in about twenty-four hours.

In the absence of hops and malt, salt and sugar should be substituted.

Stock yeast may be used directly in the sponge or dough in the proper proportion, but *its chief function is in stocking the preparation for making potato ferment*, though in its absence, any other yeast would do as a starter.

Potato ferment (or potato yeast). *Ingredients* (30 gallons): 24 gallons of water; 28 pounds of sound, well-matured potatoes; or 14 pounds of desiccated potatoes, or 9 pounds of potato flour; 5 pounds of flour; 8 quarts of stock yeast, or 8 ounces of compressed yeast, or 20 ounces of dried yeast.

Wash the potatoes thoroughly and let boil in about 6 gallons of water until well done. Drain off the water into 2 buckets. Put the potatoes in a clean barrel and mash well, then add 5 pounds of flour and 1 bucket of the potato water (to break the starch cells of the flour), and mix thoroughly. (If using desiccated potatoes, place in a boiler with sufficient water to cover them and boil until thoroughly done; if using potato flour it is thoroughly mixed with the wheat flour and scalded.) Add the remainder of the potato water and about 18 gallons of fresh water at such

a temperature that the mixture will be about 85° or 90° F.; add 8 quarts of stock yeast (or the quantity of compressed yeast or dried yeast noted above) and stir for a few minutes. Let it remain undisturbed in a warm, even temperature. The preparation will begin to ferment at once and in a few minutes bubbles will be seen rising to the surface. In about six or eight hours the scum will begin to settle and the yeast will be ready for use. *Always stir well and strain through a colander before using.* Set in a cool place and it will keep from five to seven days.

Potato ferment, or *potato yeast*, as it is sometimes called, produces as good bread as can be made, but it works quickly in the sponge or straight dough and must be carefully watched. In making it, great cleanliness is necessary, as acid fermentations may set up from obscure causes and produce sour bread. It is best to have two sets of utensils, in order that one set may be thoroughly cleaned while the other is in use. Potato ferment is the form in which liquid yeast is generally used in making bread and generally it should be made fresh each day for use the next.

CARE OF THE HEALTH AND FIRST AID TO 119 THE SICK AND INJURED

CHAPTER XII

CARE OF THE HEALTH AND FIRST AID TO THE SICK AND INJURED

CARE OF THE HEALTH ¹

1 A soldier should endeavor to be always at his best. He should avoid all exposures, not in line of duty, which he knows would be likely to injure his health, for if he is from any cause below par he is liable to break down under influences which otherwise might have had but little effect on him.

2 Even in garrison, in time of peace, soldiers often expose themselves unnecessarily by going out without overcoats when the weather is such as to require their use, or by failing to remove damp socks or other clothing on their return to barracks.

3 At rests on the march one should sit down or lie down if the ground is suitable, for every minute so spent refreshes more than five minutes standing or loitering about.

4 At the midday rest lunch should be eaten, but it should always be a light meal.

5 On the march or during exercise in hot weather the body loses water continuously by the skin and lungs and this loss must be replaced as it occurs to keep the blood in proper condition. Only a few swallows should be taken at a time, no matter how plentiful the water supply may be. When exceedingly thirsty after a long dry stretch, water should not be taken freely at once, but in smaller drinks at intervals, until the desire for more is removed.

6 Smoking in the heat of the day or on the march is depressing and increases thirst.

7 On hot marches water should be taken quite frequently, but as already stated, in small quantities at a time, to replace the loss by perspiration. This will often prevent attacks of heat exhaustion and sunstroke.

8 On a hurried or forced march, particularly in sultry weather,

(1) From THE SOLDIER'S HANDBOOK, by N. Hershler, Chief Clerk, General Staff Corps, U. S. Army.

a soldier may become faint and giddy from the heat and fatigue. His face becomes pale, his lips lead-colored, his skin covered with clammy perspiration, and he trembles all over. His arms and equipments should be removed and his clothing loosened at the neck, while he is helped to the nearest shade to lie down, with his head low, until the ambulance train or wagons come up. Meanwhile, fan him, moisten his forehead and face with water and, if conscious, make him swallow a few sips from time to time.

9 If the soldier comes into camp much exhausted, a cup of hot coffee is the best restorative. When greatly fatigued it is dangerous to eat heartily.

10 When the tents have been arranged for the night and the duties of the day are practically over, the soldier should clean himself and his clothes as thoroughly as the means at hand will permit. No opportunity of taking a bath nor of washing socks and underclothing should be lost. In any event the feet should be bathed or mopped with a wet towel every evening to invigorate the skin.

11 In the continued absence of opportunity for bathing it is well to take an air bath and a moist or dry rub before getting into fresh underclothes and, in this case, the soiled clothes should be freely exposed to the sun and air when the blanket roll is unpacked.

12 By attention to cleanliness of the person and of the clothing, the discomforts of prickly heat, chafing, cracking, blistering, and other irritations of the skin will be avoided. If chafings do occur apply to the surgeon for a healing remedy, for, if neglected, they may fester and cause much trouble.

13 A hearty meal should be eaten when the day's work is over, but the soldier should eat slowly, chewing every mouthful into a smooth pulp before swallowing; and it is good when one can rest a while after this meal. Hard bread and beans when not thoroughly chewed give rise to diarrhœa, one of the most dangerous of camp diseases. Fresh meat should be eaten sparingly when used for the first time after some days on salt rations.

14 The soldier would do well to restrict himself to the company dietary. Particularly should he avoid the articles of food or drink for sale by hawkers and peddlers. Green fruit and overripe fruit are dangerous, as is also fruit to which the individual is unaccustomed.

CARE OF THE HEALTH AND FIRST AID TO 121 THE SICK AND INJURED

Unpeeled fruit should never be eaten, for it may have been handled by persons suffering from dangerous infectious diseases.

15 It should be unnecessary to speak of the danger from the use of intoxicating liquors for every soldier knows something of this. The mind of a man under the influence of these liquors is so befogged that he is unable to protect himself from accidents and exposures. How many men have passed from this world because of exposures during intoxication! How many have lost their health and strength and become wretched sufferers during the remainder of a shortened existence! Besides, for days after indulgence in liquor the system is broken down and the individual less able to stand the fatigues, exposures or wounds of the campaign.

16 If filtered or condensed water is not furnished to the troops, and spring water is not to be had, each soldier should fill his canteen over night with weak coffee or tea for the next day's march. This involves boiling, and the boiling destroys all dangerous substances in water. Typhoid fever, cholera, and dysentery are caused by impure water.

17 All the belongings of the soldier should be taken under shelter at night to protect them from rain or heavy dews.

18 When not prevented by the military conditions, soldiers should sleep in their shirts and drawers, removing their shoes, socks, and other clothing.

19 In the morning wash the head, face and neck with cold water. With the hair kept closely cut, this can be done even when the water supply is limited.

20 In hot climates, where marches are made or other military work performed in the early morning or late in the evening, a sleep should be taken after the midday meal to make up for the shortened rest at night. Everyone, to keep in good condition should have a total of eight hour's sleep in the twenty-four.

21 If the march is not to be resumed, the soldier should take the first opportunity of improving his sleeping accommodations by building a bunk, raised a foot and a half, or more, from the ground. This is of the first importance when the ground is damp. The poncho, or slicker, must be relied upon as a protection in marching camps, but when the camp is to be occupied for some days, bunks should be built.

22 In hot climates this raising of the bunks from the ground lessens the danger from malarial fevers.

23 When malarial fevers are prevalent, hot coffee should be taken in the morning immediately after roll call, and men going on duty at night should have a lunch and coffee before starting.

24 The soldier should never attempt to dose himself with medicine. He should take no drugs except such as are prescribed by the surgeon.

25 No matter how short a time the camp is to be occupied its surface should not be defiled. The sinks should be used by every man, and the regulations concerning their use should be strictly complied with. Waste water and refuse of food should be deposited in pits or other receptacles designed to receive them. Attention to these points will prevent foul odors and flies.

26 When there are foul odors and flies in a camp the spread of typhoid fever, cholera, dysentery, and yellow fever is likely to occur.

27 When any of these diseases are present in a command every care should be taken to have the hands freshly washed at meal times.

28 In the camps of field service the interior of tents should be sunned and aired daily, and efforts should be made by every soldier to have his bunk, arms, equipments, and clothing in as neat and clean condition as if he were in barracks at a permanent station.

29 Harmful exposures are more frequent in hot than in cold weather. Soldiers seek protection against cold, but in seeking shade, coolness, and fresh breezes in hot weather they often expose themselves to danger from diarrhoea, dysentery, pneumonia, rheumatism, and other diseases. A chill is an exciting cause of these affections; it should be avoided as much as possible.

30 When the feet become wet the first opportunity should be taken of putting on dry socks.

31 When the clothing becomes wet in crossing streams or in rain storms there is little danger so long as active exercise is kept up, but there is great danger if one rests in the wet clothing.

32 When the underclothes are wet with perspiration the danger is from chill after the exercise which caused the perspiration is ended. If the soldier can not give himself a towel rub and a change

CARE OF THE HEALTH AND FIRST AID TO 123 THE SICK AND INJURED

of underclothing, he should put on his blouse and move about until his skin and clothes become dry.

33 To rest or cool off, and particularly to fall asleep, in a cool, shady place in damp clothes is to invite suffering, perhaps permanent disability or death.

34 When an infectious disease is known to be present among the civil population in the neighborhood of a military camp or station, care should be taken by every member of the command to avoid exposure to the infection. Scarlet fever, measles, and diphtheria, are met with in the United States, but in some localities our troops may have to guard against smallpox, yellow fever, cholera, and bubonic plague. The careless or reckless individual will be the first to suffer, but he may not suffer alone; many of his comrades may become affected and die through his fault.

35 Such infections prevail mostly among the lower classes of a community who have no knowledge of the difference between healthful and unhealthful conditions of life. Communication with them should therefore be avoided.

36 The soldier should remember that association with lewd women may disable him for life.

THE CARE OF THE FEET

The feet should be kept clean and the nails cut close and square. An excellent preventative against sore feet is to wash them every night in hot (preferably salt) water and then dry thoroughly.

Rubbing the feet with hard soap, grease or oil of any kind before starting on a march is also good.

Sore or blistered feet should be rubbed with tallow from a lighted candle and a little common spirits (whiskey or alcohol in some other form) and the socks put on at once.

Blisters should be perforated and the water let out, but the skin must not be removed.

A little alum in warm water is excellent for tender feet.

Two small squares of zinc oxide plaster, one on top of the other, will prevent the skin of an opened blister from being pulled off. Under no circumstances, should a soldier ever start off on a march with a pair of new shoes.

FIRST AID TO THE SICK AND INJURED⁽¹⁾

In operating upon a comrade, the main things are to keep cool, act promptly, and make him feel that you have no doubt that you can pull him through all right. Place him in a comfortable position, and expose the wound. If you cannot otherwise remove the clothing quickly and without hurting him, rip it up the seam. First stop the bleeding, if there is any; then cleanse the wound; then close it, if a cut or torn wound; then apply a sterilized dressing; then bandage it in place.

As for the patient himself, let him never say die. Pluck has carried many a man triumphantly through what seemed the forlornest hope.

Kit Carson once helped to amputate a comrade's limb when the only instruments available were a razor, a handsaw, and a kingbolt of a wagon. Not a man in the party knew how to take up an artery. Fine teeth were filed in the back of the saw, the iron was made white hot, the arm removed, the stump seared so as to close the blood vessels, and—the patient recovered.

Charles F. Lummis, having fractured his right arm so badly that the bone protruded, and being alone in the desert, gave his canteen strap two flat turns about the wrist, buckled it around a cedar tree, mounted a near by rock, set his heels upon the edge, and threw himself backward. He fainted; but the bone was set. Then having rigged splints to the injured member with his left hand and teeth, he walked fifty two miles without resting, before he could get food, and finished the 700-mile tramp to Los Angeles with the broken arm slung in a bandanna.

Richardson tells of a Montana trapper who, having his leg shattered in an Indian fight, and finding that gangrene was setting in, whetted one edge of his big hunting knife, filed the other into a saw, and with his own hands cut the flesh, sawed the bone, and seared the arteries with a hot iron. He survived.

(1)Compiled from "The Book of Camping and Woodcraft," by Horace Kephart (The Outing Publishing Company, New York), from "The Complete Camper's Manual," (Gold Medal Camp Furniture Mfg. Co., Racine, Wis.); "Outlines of First Aid For the Hospital Corps, U. S. A., and "First Aid in Illness and Injury," by James E. Pilcher, Medical Corps, U. S. A., (Charles Scribner's Sons, New York.)

CARE OF THE HEALTH AND FIRST AID TO 125 THE SICK AND INJURED

Bite of Rabid Animal. The bite of a mad dog, wolf, skunk, or other animal subject to rabies, requires instant and heroic treatment. Immediately twist a tourniquet very tight above the wound, and then cut out the whole wound with a knife, or cauterize it to the bottom with a hot iron; then drink enough whiskey to counteract the shock.

Bite of Snake. See "Snake Bite."

Bleeding, how checked. To stop the flow of blood temporarily raise the injured part as high as you can above the heart, and press very firmly with thumb or finger either on or into the wound. The patient can do this for himself, and can control the bleeding until his hand gives out. There is record of an Austrian soldier who stopped bleeding from the great artery of the thigh for four hours by plugging the wound with his thumb; if he had let go for a minute he would have bled to death.

Observe whether the bleeding is arterial or venous. If it comes from a vein, the blood will be dark red or purplish, and will flow in a steady stream. Press upon the vein *below* the wound; then prepare a clean pad (compress) and bind it upon the wound firmly enough to stop the bleeding permanently.

If an artery is cut, the blood will be bright red, and it will probably spurt in jets. Try to locate the artery above the wound (between it and the heart) by pressing very hard where you think the artery may pass close to a bone, and watch if this checks the flow. When you find the artery, then, if the wound be in leg, arm, head, or any other place where a tourniquet can be applied, proceed as follows:

Tie a strong bandage (handkerchief, belt, suspender, rope, strip of clothing) around the wounded member, and between the wound and the heart. Under it, and directly over the artery, place a smooth pebble, a cartridge, piece of stick, or other hard lump. Then thrust a stout stick under the bandage, and twist until the wound stops bleeding. The lump serves two purposes: it brings the most pressure where it will do the most good, and it allows passage of enough blood on either side to keep the limb from being strangled to death.

If the position of the artery above the wound cannot be determined, then, in case of a gaping wound that would be hard to plug,

apply the tourniquet without any lump, and twist it very tight indeed. This can only be done for a short time, while you are preparing to ligate the artery; if prolonged, it will kill the limb, and gangrene will ensue. In case of a punctured wound, such as bullet hole, it is better to push a plug hard down in the wound itself, leaving the outer end projecting so that a bandage will hold the plug firmly on the artery. This must be done, anyway, wherever a tourniquet cannot be used.

The above expedients are only temporary; for a cut artery, if of any considerable size, must be ligated—that is to say, permanently closed by tying one or both of the severed ends. To do this you must have at least a pair of sharp-pointed forceps or strong tweezers. Perhaps you may have to extemporize them—if you have no iron, make a little pair of tongs by heating the middle of a green hardwood stick, bending over, and then shaping and fire-hardening the ends. Get hold of the end of the artery with this, draw it out, and have some one hold it. Then take a piece of strong thread that has been sterilized in boiling salt water, make a loop in it as for a common knot, but pass the right hand end of the thread twice around the other, instead of once (surgeon's knot—it will never slip).

*Slip this loop down over the forceps and around the end of the artery, and draw tight. If the vessel bleeds from both ends, ligate both.

Powdered alum, tamped hard into a wound will stop bleeding from all but a large artery. So will substances rich in tannin, such as powdered sumac leaves (dried over the fire, if green) and pulverized oak or hemlock bark. Do not use cobwebs, nor the woolly inside of puff balls—these old-fashioned styptics are likely to infect a wound with micro-organisms, and thus do more harm than good,

If a finger or toe is cut off, as with an axe, clap it quickly into place and bind it there; it may grow on again.

Bruises. Ordinary bruises are best treated with cold, wet cloths. Raw, lean meat applied to the part will prevent discoloration. Severe bruises, which are likely to form abscesses, should be covered with cloths wrung out in water as hot as can be borne, to be reheated as it cools; afterwards with hot poultices.

Burns. If clothing sticks to the burn, do not try to remove it, but cut around it and flood it with oil. Prick blisters at both ends with a perfectly clean needle, and remove the water by gentle pressure, being careful not to break the skin. A good application for a

CARE OF THE HEALTH AND FIRST AID TO 127 THE SICK AND INJURED

burn, including sun burn, is carron oil (equal parts linseed oil and limewater). Druggists supply an ointment known as "solidified carron oil" that is easier to carry. A three per cent. solution of carbolic acid, applied with absorbent cotton or a bandage, is an excellent application. Better still is the salve known as ungentine. Lacking these the next best thing is common baking soda. (Baking soda is the bicarbonate; washing soda, or plain soda, is the carbonate; do not confuse them). Dissolve in as little water as is required to take it up; saturate a cloth with this and apply. Another good application for burns is the scrapings of a raw potato, renewed when it feels hot. If you have none of these, use any kind of clean oil or unsalted grease, or dust flour over the burn, or use moist earth, preferably clay; then cover with cotton cloth. Do not remove the dead skin until new skin has formed underneath.

Burning Clothes, particularly that of females, has been the unnecessary cause of many horrible deaths, either from ignorance of the proper means of extinguishing the flames, or from lack of presence of mind to apply them. A person whose clothing is blazing should (1) immediately be made to lie down—be thrown if necessary. The tendency of flames is upward, and when the patient is lying down, they not only have less to feed upon, but the danger of their reaching the face, with the possibility of choking and of ultimate deformity, is greatly diminished. (2) The person should then be quickly wrapped up in a coat, shawl, rug, blanket or any similar article, preferably woolen, and never cotton, and the fire completely smothered by pressing and patting upon the burning points from the outside of the envelope.

The flames having been controlled in this way, when the wrap is removed, great care should be taken to have the slightest sign of a blaze immediately and completely stifled. This is best done by pinching it, but water may be used. Any burns and any prostration or shock should be treated in the manner prescribed for them.

It is always dangerous for a woman to attempt to smother the burning clothing of another, on account of the danger to her own clothing. If she attempts it, she should always carefully hold between them the rug in which she is about to wrap the sufferer.

Chiggers. Apply sodium hyposulphate ("Hypo"). Bacon is also excellent.

Choking. *Foreign Body in the Throat.* The common practice of

slapping the back often helps the act of coughing to dislodge choking bodies in the pharynx or windpipe.

When this does not succeed, the patient's mouth may be opened and two fingers passed back into the throat to grasp the object. If the effort to grasp the foreign body is not successful, the act will produce vomiting, which may expel it.

A wire, such as a hairpin, may be bent into a loop and passed into the pharynx to catch the foreign body and draw it out. The utmost precautions must be taken neither to harm the throat nor to lose the loop.

In children, and even in adults, the expulsion of the body may be facilitated by lifting a patient up by the heels and slapping his back in this position.

Summon a physician, taking care to send him information as to the character of the accident, so that he may bring with him the instruments needed for removing the obstruction.

Clothing, burning of. See "Burning Clothing."

Colds. Put on warm, dry clothing. Drink freely of hot ginger tea; cover well at night; give dose of quinine every six hours; loosen the bowels.

Constipation. Give doses compound cathartic pills, eat freely of preserves; drink often.

Convulsions. Give hot baths at once; rub well the lower parts of the body to stimulate; keep water as hot as possible without scalding, then dry and wrap up very warm.

Cramps and Chills. Mix pepper and ginger in very hot water and drink. Give dose of cramp tablets.

A hot stone makes a good foot warmer.

Diarrhoea. Apply warm bandages to stomach; fire brown a little flour to which two teaspoonfuls of vinegar and one teaspoonful of salt are added; mix and drink. This is a cure, nine cases out of ten. A tablespoonful of warm vinegar and teaspoonful of salt will cure most severe cases. Don't eat fruit. A hot drink of ginger tea is good. Repeat every few hours the above.

Dislocations. A dislocation of a finger can generally be reduced by pulling strongly and at the same time pushing the tip of the finger backward.

If a shoulder is thrown out of joint, have the man lie down,

CARE OF THE HEALTH AND FIRST AID TO 129 THE SICK AND INJURED

place a pad in his arm pit, remove your shoe, and seat yourself by his side, facing him; then put your foot in his armpit, grasp the dislocated arm in both hands, and simultaneously push with your foot, pull on his arm, and swing the arm toward his body till a snap is heard or felt.

For any other dislocation, if you can possibly get a surgeon, do not meddle with the joint, but surround it with flannel cloths, wrung out in hot water, and support with soft pads.

Fainting. Lay the patient on his back, with feet higher than his head. Loosen tight clothing, and let him have plenty of fresh air. Sprinkle his face with cold water and rub his arms with it. When consciousness returns, give him a stimulant. For an attack of dizziness bend the head down firmly between the knees.

Drowning. The instructions issued by the U. S. Volunteer Life Saving Corps, are as follows:

RESCUING. Approach the drowning man from behind, seizing him by the coat collar, or a woman by the back hair, and tow him at arms length to boat or shore. Do not let him cling around your neck or arms to endanger you. Duck him until unconscious if necessary to break dangerous hold upon you; but do not strike to stun him.

RESUSCITATION. *First:* Immediately loosen the clothing about the neck and chest, exposing them to the wind, except in very severe weather, and get the water out of the body. First try tickling in the throat by a straw or feather, or ammonia to the nose; try a severe slap with the open hand upon the chest and soles of feet; if no immediate result proceed as follows:

Second: Lay the body with its weight on the stomach, across any convenient object, a keg, box, boat, timber or your knee, in the open air, with the head hanging down. Open the mouth quickly drawing the tongue forward with handkerchief or cloth so as to let the water escape. Keep the mouth clear of liquid. Then roll the body gently from side to side so as to relieve the pressure on the stomach, then back to the stomach. Do this several times to force the water from the stomach and throat.

Third: Laying the body on the back, make a roll of coat or any garment, place it under the shoulders of patient, allowing the head to fall back. Then kneel at the head of the patient. Grasp the arms at the middle of forearms, folded across the stomach, raise the arms

over the head to a perpendicular position, drawing them backwards straight, then forward overhead to the sides again, pressing the arms on the lower part of the ribs and sides, so as to produce a bellows movement upon the lungs. Do this sixteen or eighteen times a minute. Smelling salts, camphor or ammonia may be applied to the nostrils to excite breathing. But give no spirits internally until after breathing and circulation are restored. The clothing should be removed, the body dried, and the legs rubbed briskly upwards, from foot to knee, occasionally slapping the soles of the feet with the open hand.

Fourth: On signs of life, or when breathing is restored, wrap in warm blanket or hot cloths. To encourage circulation, hot tea, brandy or any spirits may be given in small doses, with care to avoid strangulation, and brisk rubbing and warmth applied to the entire body.

Keep at work until recovery, or death is pronounced certain by a physician. Persons have revived after two hours' steady work, but most cases revive within thirty minutes.

Drunkenness. Cold water dashed in the face often proves a most satisfactory awakener.

Cause vomiting by tickling the pharynx with a feather or something of the kind; by administering a tablespoonful of salt or mustard in a cup of warm water. Aromatic spirits of ammonia is very efficient in sobering a drunken man—a teaspoonful in half a cup of water.

A cup of hot coffee after vomiting will aid to settle the stomach and clear the mind.

Lay the subject in a comfortable position, applying hot, dry fomentations, if there is marked coldness.

Ear, Foreign Body in. In case of living insect, (a) hold a bright light to the ear. The fascination which a light has for insects will often cause them to leave the ear to go to the light. If this fails, (b) syringe the ear with warm salt and water, or (c) pour in warm oil from a teaspoon, and the intruder will generally be driven out.

If the body be vegetable, or any substance liable to swell, do not syringe the ear, for the fluid will cause it to swell, and soften and render it much more difficult to extract. In a case of this kind, where a bean, a grain of corn, etc., has gotten into the ear, the body

CARE OF THE HEALTH AND FIRST AID TO 131 THE SICK AND INJURED

may be jerked out by bending the head to the affected side and jumping repeatedly.

If the body is not liable to swell, syringing with tepid water will often wash it out.

If these methods fail, consult a medical man. The presence of a foreign body in the ear will do no immediate harm, and it is quite possible to wait several days, if a surgeon cannot be gotten before.

Earache. A piece of cotton sprinkled with pepper and moistened with oil or fat will give almost instant relief. Wash with hot water.

Eyes, inflamed. Bind on hot tea leaves or raw fresh meat. Leave on over night. Wash well in morning with warm water.

Eye, Foreign Body in. Close the eye for a few moments and allow the tears to accumulate; upon opening it, the body may be washed out by them. Never rub the eye.

If the body lies under the lower lid, make the patient look up, and at the same time press down upon the lid; the inner surface of the lid will be exposed, and the foreign body may be brushed off with the corner of a handkerchief.

If the body lies under the upper lid, (1) grasp the lashes of the upper lid and pull it down over the lower, which should at the same time, with the other hand, be pushed up under the upper. Upon repeating this two or three times, the foreign body will often be brushed out on the lower lid. (2) If this fails, the upper lid should be turned up; make the patient shut his eye and look down; then with a pencil or some similar article press gently upon the lid at about its middle, and grasping the lashes with the other hand, turn the lid up over the pencil, when its inner surface will be seen, and the foreign body may readily be brushed off.

If the body is firmly imbedded in the surface of the eye, a careful attempt may be made to lift it out with the point of a needle. If not at once successful, this should not be persisted in, as the sight may be injured by injudicious efforts.

After the removal of a foreign body from the eye, a sensation as if of its presence often remains. People not infrequently complain of a foreign body when it has already been removed by natural means. Sometimes the body has excited a little irritation, which feels like a foreign body. If this sensation remains over night, the eye needs

attention, and a surgeon should be consulted; for it should have passed away if no irritating body is present.

After the removal of an irritating foreign body from the eye, some bland fluid should be poured into it. Milk, thin mucilage of gum arabic, sweet oil, or salad oil are excellent for this purpose.

Famishing. Do not let a starved person eat much at a time. Prepare some broth, or a gruel of corn meal or oatmeal thoroughly cooked, and feed but a small spoonful, repeating at intervals of a few minutes. Give very little the first day, or there will be bloating and nausea.

Fatigue, excessive. Take a stimulant or hot drink when you get to camp (but not until then), and immediately eat something. Then rest between blankets to avoid catching cold.

Feet, sore and blistered. See "Care of Feet," page 123.

Fevers. Give doses of quinine tablets; loosen bowels if necessary; keep dry and warm.

Freezing. Keep away from heat. To toast frost bitten fingers or toes before the fire would bring chilblains, and thawing out a badly frozen part would probably result in gangrene, making amputation necessary. Rub the frozen part with snow, or with ice cold water, until the natural color of the skin is restored. Then treat as a burn.

Chilblains should be rubbed with whiskey or alum water.

Freezing to Death. At all hazards keep awake. Take a stick and beat each other unmercifully; to restore circulation to frozen limbs rub with snow; when roused again don't stop or fall asleep—it is certain death. Remember this and rouse yourself.

Head, How to Keep Cool. By placing wet green leaves inside of hat.

Insect Stings. Extract the sting, if left in the wound, and apply a solution of baking soda, or a slice of raw onion, or a paste of clay, mixed with saliva, or a moist quid of tobacco. Ammonia is the common remedy, but oil of sassafras is better. A watch key or other small hollow tube pressed with force over the puncture and held there several minutes will expel a good deal of the poison.

Ivy Poison. Relieved with solution of baking soda and water; use freely as a cooling wash. Keep the bowels open.

CARE OF THE HEALTH AND FIRST AID TO 133 THE SICK AND INJURED

Lightning, Struck by. Dash cold water on body continually; if severe case, add salt to water; continue for hours if necessary. If possible submerge body in running water up to neck.

Nose, Foreign Body in. Close the clear side of the nose by pressure with a finger, and make the patient blow the nose hard. This will usually dislodge the object.

If this fails, induce sneezing either by tickling the nose with a feather or something of the kind, or by administering snuff.

The nasal douche, where a syringe or a long rubber tube suitable for a siphon is available, may be used in case the body is not liable to swell, injecting luke warm water into the clear nostril with the expectation that it will push the body out of the other.

If these fail, and the body can be seen clearly, an effort may be made to fish it out by passing a piece of wire, bent into a little hook, back into the nostril close to the wall, and catching the body with it. A hairpin may be bent straight and the hook formed at one end. Do not continue these manoeuvres very long nor let them be rough in the slightest degree.

All simple efforts having failed, send for a physician. There is no danger in leaving the foreign body in place for some days if it is impossible to consult a physician in less time.

Nosebleed is sometimes uncontrollable by ordinary means. Try lifting the arms above the head and snuffing up alum water or salt water. If this fails, make a plug by rolling up part of a half inch strip of cloth, leaving one end dangling. Push this plug as far up the nose as it will go, pack the rest of the strip tightly into the nostril, and let the end protrude. If there is leakage backward into the mouth, pack the lower part of plug more tightly. Leave the plug in place several hours; then loosen with warm water or oil, and remove very gently.

Ointment for Bruises, Etc. Wash with hot water; then anoint with tallow or candle grease.

Piles. Men with piles should take special pains to keep their bowels open and to bathe the parts with cold water.

Poisons. In all cases of poisoning there should be no avoidable delay in summoning a physician. The most important thing is that the stomach should be emptied at once. If the patient is able to swallow this may be accomplished by emetics, such as mustard and water, a teaspoonful of mustard to a glass of water, salt and

water, powdered ipecac and copious draughts of luke warm water. Vomiting may also be induced by tickling the back of the throat with a feather. When the patient begins to vomit, care should be taken to support the head in order that the vomited matter may be ejected at once, and not swallowed again or drawn into the wind pipe.

Poultices. Poultices may be needed not only for bruises but for felons, boils, carbuncles, etc. They are easily made from corn meal or oat meal. Mix by adding a little at a time to boiling water and stirring to a thick paste; then spread on cloth. Renew from time to time as it cools.

To prevent a poultice from sticking, cover the under surface with clean mosquito netting, or smear the bruise with oil. It is a good idea to dust some charcoal over a sore before putting the poultice on. The woods themselves afford plenty of materials for good poultices. Chief of these is slippery elm, the mucilaginous innerbark of which, boiled in water and kneaded into a poultice, is soothing to inflammation and softens the tissues. Good poultices can also be made from the soft rind of tamarack, the rootbark of basswood or cottonwood, and many other trees or plants. Our frontiersmen, like the Indians, often treated wounds by merely applying the chewed fresh leaves of alder, striped maple (moosewood) or sassafras.

Salves. Balsam obtained by pricking the little blisters on the bark of balsam firs is a good application for a wound; so is the honey like gum of the liquidambar or sweet gum tree, raw turpentine from any pine tree, and the resin procured by "boxing" (gashing) a cypress or hemlock tree, or by boiling a knot of the wood and skimming off the surface. All of these resins are antiseptics and soothing to a wound.

Scalds. Relieve instantly with common baking soda and soaking wet rags—dredge the soda on thick and wrap wet clothes thereon. To dredge with flour is good also.

Shock. In case of collapse following an accident, operation, fright: treat first as for fainting. Then rub the limbs with flannel, stroking the extremities toward the heart. Apply hot plates, stones, or bottles of hot water, wrapped in towels, to the extremities and over the stomach. Then give hot tea or coffee, or if there is no bleeding, a tablespoonful of whiskey and hot water, repeating three or four times an hour.

CARE OF THE HEALTH AND FIRST AID TO 135 THE SICK AND INJURED

Skin, protection of, in cold weather. Smear the face, ears and hands with oil or grease. The eyes may be protected from the reflection of the sun on snow by blackening the nose and cheeks.

Snake Bite. When a man is bitten he should instantly twist a tourniquet very tightly between the wound and the heart, to keep the poison, as far as possible, from entering the system. Then cut the wound wide open, so it may bleed freely, and suck the wound, if practicable (the poison is harmless if swallowed, but not if it gets into the circulation through an abrasion in the mouth or through a hollow tooth.) Loosen the ligature before long to admit fresh blood to the injured part, but tighten it again very soon, and repeat this alternate tightening and loosening for a considerable time. The object is to admit only a little of the poison at a time into the general circulation. Meantime drink whiskey in moderate doses, but at frequent intervals. If a great quantity is guzzled all at once it will do more harm than good. Whiskey is not an antidote; it has no effect at all on the venom; its service is simply as a stimulant for the heart and lungs, thus helping the system to throw off the poison, and as a bracer to the victim's nerves, helping him over the crisis.

Snow or Sun Blindness. Smear the nose and face about the eyes with charcoal.

Sore Throat. Fat bacon or pork tied on with a dry stocking; keep on until soreness is gone then remove fat and keep covering on a day longer. Tincture of Iron diluted; swab the throat. Gargling with salt and hot water is effective. Listerine, used as a gargle, is also good.

Sprains. The regular medical treatment is to plunge a sprained ankle, wrist or finger, into water as hot as can be borne at the start, and to raise the heat gradually thereafter to the limit of endurance. Continue for half an hour, then put the joint in a hot, wet bandage, re-heat from time to time, and support the limb in an elevated position, the leg being stretched as high as the hip, or the arm carried in a sling. In a day or two begin gently moving and kneading the joint, and rub with liniment, oil, or vaselin.

Sprains may also be treated by the application of cold water and cloths.

As a soothing application for sprains, bruises, etc., the virtues of witch hazel are well known. A decoction (strong tea) of the bark

is easily made, or a poultice can be made from it. The inner bark of kinnikinnick, otherwise known as red willow or silky cornel, makes an excellent astringent poultice for sprains. The pain and inflammation of a sprained ankle are much relieved by dipping tobacco leaves in water and binding them around the injured part.

Stings of Insects. See "Insect Stings."

Stunning. Concussion of the brain: lay the man on his back, with head somewhat raised. Apply heat as for shock, but keep the head cool with wet cloths. Do not give any stimulant—that would drive blood to the brain, where it is not wanted.

Sunstroke. Lay the patient in a cool place, position same as for stunning. If the skin is hot, remove clothing, or at least loosen it. Hold a vessel or hat full of cold water four or five feet above him and pour a stream first on his head, then on his body, and last on his extremities. Continue until consciousness returns. Renew if symptoms recur.

If the skin is cool (a bad sign) apply warmth, and give stimulating drinks.

Thirst. Allow the sufferer only a spoonful of water at a time, but at frequent intervals. Bathe him if possible.

To quench thirst. Don't drink too often, better rinse out the mouth often, taking a swallow or two only. A pebble or button kept in the mouth will help quench that dry and parched tongue.

Toothache. Warm vinegar and salt. Hold in mouth around tooth until pain ceases, or plug cavity with cotton mixed with pepper and ginger.

Wounds. When a ball enters or goes through the muscles or soft parts of the body alone, generally nothing need be done except to protect the wound or wounds with the contents of the first aid packet. The directions for the use of this packet are simple, and each packet contains them. In doing this always be careful of one thing—not to touch the wound with your fingers nor handle it in any way, for the dirt on your hands is harmful, and you must disturb a wound as little as possible. Be content to open the packet carefully, and, placing the small pads or compresses upon the wound or wounds, to wrap the binder or narrow bandage firmly about the parts, fastening with a safety pin. This will hold the pads in place and will help to stop the ordinary bleeding. The large or triangular

CARE OF THE HEALTH AND FIRST AID TO 137 THE SICK AND INJURED

bandage should be bound over this or used as a sling if required. Generally this is all that is necessary for the first treatment, and sometimes it is all that is needed for several days. The importance of the care with which this first dressing is made can not be too seriously insisted upon. It is better to leave a wound undressed than to dress it carelessly or ignorantly, so that the dressing must soon be removed.

The following should always be remembered:

1. Never touch a wound with anything unclean—dirty fingers, non-disinfected bandages, dirty water, etc. It may cause inflammation, ulceration, or blood poisoning.

2. Expose the wound by removing the covering article of dress, which contains many impurities. Unbutton or cut clothes and examine extent of bleeding. Open all articles of clothing which might hinder circulation of blood or breathing (collar, necktie, belt). To avoid pain and bleeding, raise legs by putting under them a valise, saddle, truss of straw, etc.; slight bleeding will often cease in this position of its own accord, without any bandaging. A bandage is advisable to protect the wound from dirt, flies or cold. **USE THE FIRST AID PACKET.**

Cleansing. After stopping the flow of blood, cleanse the wound of any foreign substance that may have entered it. To remove a splinter, slip the point of a small knife blade under the protruding end and catch it with the thumb nail. A fish hook imbedded in the flesh should be pushed on through; then nip or file off the barb, and withdraw. If a bullet is deeply imbedded, let it alone; the chances are that it will do no harm.

After picking out dirt, bits of cloth, or other matter that would make the wound sore and slow to heal, wash the injured part with perfectly clean water. If there be any doubt about the water, boil it.

Do not mop the wound with a rag. Hold the water a few inches above it and let a small stream gently trickle down upon it. A clean cut needs no washing; simply draw the edges together and fasten them in place. Whenever it can be done, shave the skin for some distance around the wound. Hairs, no matter how small, are grease coated and favor the growth of germs. Shaving also scrapes off the surface dirt and dead scales of skin.

Closing. Never cover a wound with court plaster. It prevents

the free escape of suppuration, inflames the part, and makes the place difficult to cleanse thereafter. The only legitimate uses for sticking plaster are to hold dressings in place where bandaging is difficult (as on the buttock), or, in case of a cut to keep the edges closed without sewing the skin. In the latter case the cut may be crossed with narrow strips of plaster, leaving spaces between; but a better way, if you have regular surgeon's plaster, is as follows: Lay a broad strip on each side of the cut half an inch apart, and extending beyond the wound at each end. Stick these strips firmly in place, except about a quarter of an inch of the inner margins, which are left loose for the present. With needle and thread lace the strips (deep stitches, so they'll not pull out) so as to draw the edges of the wound together, and then stick the inner margins down, not covering the wound.

Sewing a wound should be avoided by inexperienced persons, unless it is really necessary, as in the case of a foot almost severed by an axe cut. If an ordinary needle and thread must be used, sterilize them by soaking in a boiling solution of salt and water. (It is here assumed that no better antiseptic agents are available. Sugar and water, or vinegar will do in a pinch.) Do not sew continuously over and over, but make a deep stitch and snip off the thread, leaving enough at each end to tie with by and by. Repeat this at proper intervals, until enough stitches have been taken; then, go back and tie them, one after another, with surgeon's knot. Such sewing is easy to remove when the proper time comes, say within about six days.

Dressing. An inflammation of wounds, suppuration, and blood poisoning, are due to living germs, and to nothing else. These germs are not born in the wound, but enter from the outside. We may as well say that they are present everywhere. To prevent their entrance is much easier than to kill them once they have gained foothold. The only guarantee of a wound healing nicely is to make it antiseptic—that is to say, surgically clean. That means sterilizing everything used about the wound (by heat, if you have no antiseptics), not trusting that anything is germ free because it looks clean. The micro-organisms that cause inflammation of a wound, fever, putrefaction, cannot be seen with the eye, and they may lurk anywhere.

Do not use a mere bandage directly on an open wound. First, cover the injury with a compress (soft pad, made by folding a strip of cloth in several layers); then bandage. Unless you have a first aid packet, or are otherwise provided with sterilized dressings or

CARE OF THE HEALTH AND FIRST AID TO 139 THE SICK AND INJURED

antiseptics, hold the material of the compress over a clear fire until it is fairly scorched; then let it cool. A little charring of the surface will do no harm; in fact charcoal is itself a good application to the surface of a wound. Of course the compress is to be renewed every time the wound is dressed.

NOTE.

The only way to learn how to use bandages, slings and splints; how to make tourniquets, and how to handle fractures, is to have someone who thoroughly understands these things show you in person how to do them and then for you to do them yourself. It is, therefore, suggested that such instruction be received from some non-commissioned officer of the Hospital Corps.

CHAPTER XIII

INTRENCHMENTS⁽¹⁾

Lying Trench.—When intrenching under fire, cover is first secured in the lying position, each man scooping out a depression for his body and throwing the earth to the front. Such a trench affords limited protection against rifle fire and less against shrapnel. Soldiers should be taught to construct such trenches as rapidly as possible, avoiding all neatness which takes time, having in view only the rapid construction of a row of pits.

Sitting Trench.—If time permits, the original excavation may be enlarged and deepened until it is possible to assume a sitting position, with the legs crossed and the shoulder to the parapet. In such a position a man presents a smaller target to shrapnel bullets than in the lying position and can fire more comfortably and with less exposure than in the kneeling position.

Standing Trench.—From the sitting trench the excavation may be continued until a standing position is possible.

Classification of Trenches:

Trenches may be classified into *fire trenches*, *cover trenches* and *communicating trenches*, the first-named being occupied by the firing line, the second by the supports, and the last by troops passing between the first and second.

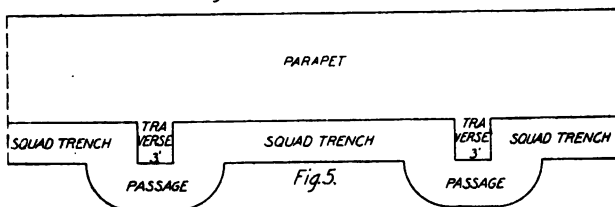
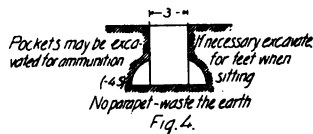
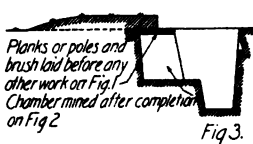
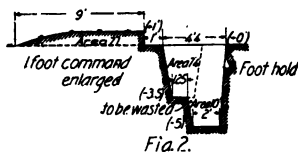
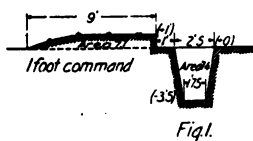
(a) Fire trenches:

The lessons learned from the Russo-Japanese War have resulted in the discarding of the old-fashioned wide and shallow kneeling trenches. The simplest form of *fire trench* is deep and narrow and has a flat concealed parapet, as shown in Fig. 1. In ordinary soil, and on a basis of two reliefs and tasks of 5 feet, it can be constructed in about two hours with intrenching tools. This trench affords fair cover for troops subjected to artillery fire, but not actually firing.

⁽¹⁾Works consulted in the preparation of this chapter: Infantry Drill Regulations (1911), the Field Service Regulations (1910), "Applied Principles of Field Fortifications for Line Officers," by Woodruff. The last-named book is recommended to those wishing to go into a full, detailed study of field fortifications.

When it is probable that time will permit elaboration, the simple trench should be planned with a view to developing it ultimately into more complete forms, as shown in Figs. 2 and 3.

In very difficult soil, if the time is short, it may be necessary to dig a wider, shallower trench with a higher parapet.



A Trench Without Parapet.—Where the excavated earth is easily removed, a fire trench without parapet, as shown in Fig. 4, may be the one best suited to the soil and other conditions affecting the choice of profile. The enemy's infantry, as well as his artillery, will generally have great difficulty in seeing this trench.

It must be remembered that the type profiles given are not at all rigid and that they should be modified to suit the ground.

Head Cover is very desirable; without it a heavy fire of musketry and shrapnel would lessen the fire effect of the men manning the parapet. However, care should be taken to make the head cover invisible—it should blend into the parapet. *Head cover* may be obtained

by notching or loopholing the top of the parapet. Loopholes should be 3 to 3½ feet, center to center, and means should be taken to prevent the enemy from seeing light through the loophole; otherwise he will wait for the light to be obscured, when he will fire, knowing there is then a man's head behind the loophole. A background must, therefore, be provided or a removable screen arranged so that there will be no difference in the appearance of the loophole.

When head cover is not considered advisable, sand bags may be stored in the trenches and when the firing begins from the trench, each soldier lays a sand bag upon the parapet, practically parallel to the direction of the line of fire.

Overhead Cover should be provided, time permitting. It usually consists of a platform of planks, poles or brushwood, covered with earth. When poles or brushwood is used a layer of sods, straw or grain sacks should be placed on the platform to prevent the earth from sifting through. The thickness of the earth will depend upon the kind of fire against which protection is sought. A thickness of 6 or 8 inches will afford protection against shrapnel.

Lookouts.—To enable the garrison of a trench to get the greatest amount of comfort and rest, a *lookout* should be constructed and a sentinel stationed therein.

The simplest form would consist of two sandbags placed on the parapet and splayed so as to give the required view, and carefully concealed.

Better forms may be constructed, with one side resting on the berm by using short uprights with overhead cover, a slit on all sides being provided for observation.

Location.—There are two things to be considered in locating trenches: (1) The tactical situation, and (2) the nature of the ground. The first consideration requires that the trenches be so located as to give the best field of fire. Locating near the base of hills possesses the advantage of horizontal fire, but, as a rule, it is difficult to support trenches so located and to retreat therefrom in case of necessity. While location near the crest of hills—on the "military crest"—does not possess the advantage of horizontal fire, it is easier to support trenches so located and to retreat therefrom. Depending upon circumstances, there are times when it will be better to intrench near the base of hills and there are other times when it will be better to intrench on

the "military crest", which is always in front of the natural crest. The construction of trenches along the "military crest" does not give any "dead space"—that is, any space to the front that can not be reached by the fire of the men in the trenches. To locate the trace of the trenches, lie on the ground at intervals and select the best field of fire consistent with the requirements of the situation.

With regard to the nature of the ground, trenches should, if practicable, be so located as to avoid stony ground, because of the difficult work entailed and of the danger of flying fragments, should the parapet be struck by an artillery projectile.

Trenches should be laid out in company lengths, if possible, and adjoining trenches should afford each other mutual support. The flanks and important gaps in the line should be protected by fire trenches echeloned in rear.

Clearing the Foreground.—Time permitting, it is very important that the ground in front of the trenches should be cleared of brush-wood, high grass and everything else that might screen the enemy.

Concealment of Trenches.—The location of the trenches should be disguised by covering the side toward the enemy with grass, branches, leaves, etc.

Obstacles.—It is sometimes desirable to place obstacles in front of trenches, so as to obstruct the advance of the enemy, break up his formation and detain him under the fire of the men in the trenches. The obstacles should be placed at such a distance from the parapet that shots directed against it would not seriously injure them. They should be established from 90 to 100 yards from the parapet and never less than 60 yards. They should be concealed from the view of the enemy, so that they may come upon them as a surprise. Care must be taken that the obstacles can not be easily removed and that they shall not afford any shelter to the enemy.

A number of articles might be used as obstacles—for instance harrows, ploughs, rough wood in any form, such as roots and stumps.

Abatis consists of branches of felled trees about 15 feet long, placed preferably in several rows, the branches of one row overlapping the butts of the next row in front, with the branches sharpened and interlaced and directed towards the enemy, with their butts secured to the ground by forks, wire or by logs laid over the butts. An abatis

should be at least 5 feet high. If the trees are too large, use their branches instead.

Wire Entanglements are the most generally useful of all obstacles.

The *low entanglement* is made of stakes about 18 inches above the ground, in rows about 6 feet apart, the stakes in each row being opposite the intervals in the adjoining row. The wire is wound around the tops of the stakes and stapled and passed loosely from one stake to the next. Low entanglements should be covered with brush, grass, etc.

In the *high entanglement* the stakes are about 4 feet above the ground, in rows from 6 to 8 feet apart. The wire is run from the top of each stake to the bottom of the other stakes. When two or more wires cross, they should be tied together. Barbed wire is the more difficult to string but is the better when done. The most practical form results from the use of barbed wire for the horizontal strands and smooth wire for the rest.

(b) **Cover Trenches.**—Where natural cover is not available for the support, each fire trench should have artificial cover in rear for its support—either a *cover trench* of its own or one in common with an adjoining fire trench.

The *cover trench* is simple and rectangular in profile. Concealment is most important, but when impossible, the trench should have substantial overhead cover. It is generally concealed by the contour of the ground or by natural features.

Cover trenches should be made as comfortable as possible. It will often be advisable to make them extensive enough to provide cooking and resting facilities for the garrisons of the corresponding fire trenches.



ABATIS.

(c) **Communicating Trenches.**—Where natural, covered communication is impracticable, it will be necessary to connect the fire trenches with their corresponding cover trenches by means of *communicating trenches*, which are generally rectangular in profile, deep and narrow. They are traversed or zigzagged to escape enfilade.

Returns or pockets should be provided for use as latrines, store-rooms, dressing stations, passing points for troops, etc.

Cover from observation while passing through the trench may insure against loss as effectively as material cover from the enemy's fire.

Communicating Ways, naturally or artificially screened from the enemy's view, sometimes provide sufficient cover for the passage of troops, thus obviating the necessity for the construction of communicating trenches.

In general, any device which will permit unobserved communication will suffice. For example, a way or trail may be marked which will afford concealed communication, or a path may be cut through brush or wood, or brush, corn, etc., may be set in the ground toward the enemy.

Drainage.—The drainage of trenches that are to be occupied longer than a day is a most important matter, since the trenches may be so flooded by storms as to become untenable. The drainage problem is often a difficult one. It is sometimes necessary to resort to pumping. Seepage pits will often answer the purpose. Generally a narrow trench leading to low ground will suffice.

Provision should be made to cut off all surface drainage from the trenches.

Dummy Trenches, to deceive the enemy, are sometimes of great value. If the lay of the ground permits, it is better to locate them behind and above the occupied trenches. They must be placed at such distance from the real trenches as not to bring the latter within the fire which the former may attract. Frequently one may find a plow nearby. By running a furrow and imperfectly concealing it the appearance of a true trench is created.

The Infantry Drill Regulations gives the following as the best order of procedure when it is uncertain whether all the work planned can be completed in time:

1. Clearing foreground to improve the field of fire and construction of fire trench.
2. Head or overhead cover; concealment.
3. Placing obstacles and recording ranges.
4. Cover trenches for supports and local reserves.
5. Communicating trenches.
6. Widening and deepening of trenches; interior conveniences.

CHAPTER XIV

MISCELLANEOUS

WEIGHTS OF ARTICLES USUALLY TAKEN INTO THE FIELD

(In such cases as overcoats, shoes, packed boxes, etc., the weights are only approximate, the average of several being taken.)

	Weight.		Total Weight.	
	lbs.	ozs.	lbs.	ozs.
Ammunition rifle, 1 box (1200 rounds).				
Cartridges and clips	67	8	100	0
Bandoliers	2	3		
Box	30	5		
Bandolier (12 clips, 60 rounds).....			3	5
Belt, (20 clips, 100 rounds).....			7	
Blank Cartridges, 1 box (1000).....				
Cartridges, clips and cartons....	56	12	70	
Box	13	4		
Cartridges, (ball, in clips), 10.....				9
Clip, 1				5 ³ / ₄
Revolver, Cal. 38, 10 rounds				
Axe			3 ¹ / ₂	
			to	
			6	
			1	
Axe helve				
Belt, field, complete		•		
Cartridge belt		22	3	9 ³ / ₄
Cartridge belt fastener		8 ³ / ₄		
Suspenders		16		
Bayonet		9 ³ / ₄		
Bayonet scabbard		1 ¹ / ₂		
First Aid pouch				
Blanket			5	8
			40	
			to	
			48	
Box Locker			about	
			120	
Box, Squad			13	
22x18x14 in., containing 8 kits).....			49	
Bucket, G. I.			3	2
			5	6
			3	
Camp Kettle			3	11
			4	4

	Weight.		Total Weight.	
	lbs.	ozs.	lbs.	ozs.
Camp hatchet, (with helve) } Large...			2	2
} Small....			1	10
Canteen } Empty.....				13
} Full.....			3	6
Cot, G. M.			20	
Field Desk } Empty.....			70	
} Full.....			120	
			to	
			170	
Field range, complete, (includes the following: 1 pipe guard, 2 pipe joints, 2 elbows, 2 bake pans, 4 boilers, 1 cleaver, 1 butcher knife, 3 meat hooks, 1 burnisher, 1 butcher's steel, 2 salt shakers, 1 pepper shaker, 1 meat saw, 1 large dipper, 1 flour sieve, 1 ladle, 1 strainer (dipper), 1 basting spoon, 1 flat strainer, 1 meat fork, 2 cake turners, 1 hash machine.....)			400	
Haversack, complete.				
Haversack, ration bags and scabbard.	1	8		
Meat can	1			
Knife		2	2	14
Fork		2		
Spoon		2		
Hospital Corps knife	1	13		
Hospital Corps knife scabbard		12	2	9
Intrenching tools:				
Hand axe with carrier	2			
Pick mattock with carrier	2	14		
Shovel with carrier	2	6		
Pliers, wire	1	1	8	8
Rule, 2 foot, 4 fold		3		
Mess Pan			2	
Overcoat			8	
Pick } Without helve..			6	8
} With helve....			9	8
Poncho			about	
Revolver	2		4	
Holster		10		
Belt, woven		8		
Belt fastener		2	3	4
Rifle ¹	8	11	9	
Bayonet	1	8		19
Gun sling			4	7
Saber (For enlisted men).....				7
Tin cup			5	6
Spade			3	2
Shoes, Marching, 1 pair, No. 9 F....			2	11
Garrison, 1 pair, No. 9 F			5	7
Shovel				
Shovel			5	12
Stove, "Sibley"	18			
Stove pipe, 7 joints	14	6	32	6

¹ The maximum range of the rifle is 5,465 yds. The penetration at 100 yds., through white pine butts 1 inch thick (boards 1 inch apart), is 64.7 inches; and at 500 yds., 24.3 inches. The initial velocity is 2,700 feet per second.

	Weight		Total Weight	
	lbs.	ozs.	lbs.	ozs.
Shelter Tent Roll. (Consisting of 1 blanket, 1 suit underwear, 1 pair stockings, 1 poncho, 1 hand towel, 1 cake soap, 1 comb, 1 hair brush, 1 tooth brush, 5 shelter tent pins, 1 shelter tent pole, 1 shelter tent half.. do. (without pole)			13 12	2
Surplus kit (1 pr. drawers, 1 pr. marching shoes, 2 pr. stockings, 1 undershirt, 1 extra pair shoe laces, 1 sweater.....			6 6	4
Telescope case... } Empty.....			about 30	14
} Full.....				

WEIGHTS, DIMENSIONS AND CAPACITIES OF TENTS.
(Specifications, Office Q. M. G., February, 1912)

Kind.	Weight (complete).	Dimensions.	Capacity.
Hospital, Regulation	236 lbs., 6 ozs. (tent 105; fly 36; tent poles 72; 18 large and 26 small pins, 23 lbs., 6 ozs.)	Length of ridge 14 ft., 3 in.; height when pitched 11 ft., width 14½ ft., height of wall 4½ ft.	Will accommodate 6 patients comfortably.
Hospital, Tropical..	317 lbs., 9 ozs. (1 tent 129; 1 fly 54; tent poles 97; 36 large and 26 small pins 37 lbs., 9 ozs.)	Length of ridge 14½ ft., height when pitched 12; width 15 ft., 7 in.; height of wall 4 ft., 7 in.	do
Pyramidal.....	171 lbs., 10 ozs. (1 tent 97 lbs., 10 ozs., pole and tripod 35; 28 large and 28 small pins, 32 lbs., 6 ozs., chains, plates, rings, straps, 6 lbs., 10 ozs.)	Height when pitched 11 ft., roof 16 ft. square at base and 18 in. square at top; wall 3 ft. high.	Will accommodate 10 infantrymen comfortably, but may be made to hold 20 foot or 17 mounted men. The authorized allowance for permanent or maneuver camps is 1 for each 8 foot or mounted men.
Wall, Regulation...	97 lbs. (1 tent 45; 1 fly 16; poles 22; 10 large and 17 small pins 14.)	Length of ridge 9 ft. 2 in.; height when pitched 8½ ft.; width 8 ft., 1½ in.; height of wall 3¾ ft.	Authorized allowance: 1 to captain, 1 to 2 subalterns. Will accommodate 4 men—preferably 3. The authorized allowance for permanent or maneuver camps is 1 for each 3 men.
Wall, tropical.....	126 lbs., 13 ozs. (1 tent 56; 1 fly 17; poles 30; 22 large and 18 small pins 23 lbs. 13 ozs.)	Length of ridge 9 ft., 2 in.; height when pitched 8½ ft.; width 8 ft., 11½ in.; height of wall 3¾ ft.	do
Common.....	52 lbs., 12 ozs. (1 tent 25; poles 18; pins 9¾ lbs.)	Length of ridge 6 ft., 11 in.; height when pitched 6 ft., 10 in.; width 8 ft., 4 in.; height of wall 2 ft.	Will accommodate 3 men comfortably. No allowance for enlisted men prescribed by existing orders.
Shelter (dismounted troops) 2 halves.	6 lbs., 11 ozs. (10 pins 10 ozs.; 2 halves 6 lbs., 1 oz.)	Length of ridge 6 ft., 7 in.; length of base 6 ft., 6 in.	Affords cover for 2 men.
do (when used with pole)	7 lbs., 9½ ozs. (10 pins 10 ozs.; 1 pole 14½ ozs.; 2 halves 6 lbs., 1 oz.)		

WEIGHTS, DIMENSIONS AND CAPACITIES OF TENTS.

(Specifications, Office Q. M. G., February, 1912)

Kind	Weight (complete)	Dimensions	Capacity
Shelter (mounted troops) 2 halves.	6 lbs., 15 ozs. (10 pins, 10 ozs. 2 halves 6 lbs., 5 ozs.	Length of ridge 5 ft., 5 in., width 5ft., 1 in.	Affords cover for 2 men.
do (when used with poles.....)	8 lbs., 12 ozs. (10 pins 10 ozs., 2 poles 1 lb., 13 ozs., 2 halves 6 lbs., 5 ozs.		

HEATING TENTS. Conical wall and wall tents are heated by means of the Sibley stove, issued by the Q. M. Dept. A tent can also be very comfortably heated by means of a small oil stove (sometimes, but not generally, obtainable from the Q. M. Dept.)

RATIONS.

(February, 1912)

Kind.	Components and Kind of Packages.	Net Wt.		Gross Wt.	
		Lbs.	Ozs.	Lbs.	Ozs.
Haversack Ration	Bacon (in boxes) or canned meat Hard Bread—in tins packed in boxes. Coffee, R. & G.—in tins packed in boxes. Sugar—in double sacks. Salt—in double sacks.	1	15.7	3	0
Travel Ration	Canned Meats—in tins packed in boxes. Hard Bread—in tins packed in boxes. or Soft Bread—in sacks. Beans—in double sacks. Tomatoes—in cans packed in boxes. Jam—in cans packed in boxes. Coffee, R. & G.—in tins packed in boxes. Sugar in double sacks. Milk—in cans packed in boxes.	2	15.42	4	2
Emergency			8.	0	12

In finding the weight of the Field Ration, bacon has been considered as the meat component.

In finding the gross weight, the gross weights of original packages, as purchased by the Purchasing Commissaries, have been taken.

CAPACITIES OF WAGONS

Six-Mule Army Wagon, on good roads, load should not exceed 4,000 pounds; (Length, 10 1-6 ft.; for average conditions, 3,500 pounds is considered a fair width, 3 1-2 ft.; load. Will hold 750 rations.
depth, 1 3-4 ft.)

Four-Mule Escort Wagon (the standard wagon), on good roads, loads should not (Length, 9 1-2 ft.; exceed 3,000 pounds; for average conditions, 2,500 pounds.
width, 3 1-3 ft.; Will hold 650 rations.
depth, 1 3-4 ft.)

PACK ANIMALS

Under favorable conditions a pack animal can carry a load of about 250 pounds. However, when long or hard marches are to be made the load should not be much in excess of 200 pounds.

DIMENSIONS AND CAPACITIES OF STANDARD RAILROAD CARS

Day coach—3 men to 2 seats, 42 to 45 men.

Pullman standard sleeper—14 or 16 sections.

Tourist sleeper—12, 14 or 16 sections, 3 men to a section.

Freight car (box)—length, 34 to 36 feet; capacity, 40,000 to 60,000 pounds.

Flat car—length, 34 to 36 feet; width, 8 feet 6 inches.

Gondola or coal car—length, 34 to 36 feet; width, 8 feet 5 inches.

Palace stock car—length, 36 to 40 feet; capacity, 16 to 20 head.

Improved stock car—length, 36 to 40 feet; capacity, 20 to 24 head.

Ordinary stock car—length, 30 to 34 feet; capacity, 16 to 20 head.

ALLOWANCE OF WATER

The daily allowance of water for a horse at rest is about six gallons; when at work, from eight to twelve gallons; for a man, one gallon for all purposes. One gallon of fresh water weighs 8 1-2 pounds, approximately 1 pint to 1 pound.

RATION OF FORAGE

Horse—14 lbs. hay and 12 lbs. oats, corn or barley.

Mule—14 lbs. hay and 9 lbs. oats, corn or barley.

To each animal 3 lbs. of bran may be issued in lieu of that quantity of grain.

USEFUL ARTICLES OF FIELD EQUIPMENT.

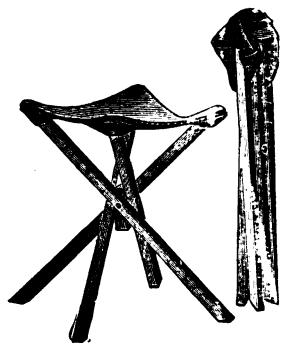
Any of the following articles, which are very useful and which add greatly to the comfort of camp life, can be obtained from Meyer's Military Shop, 1231 Pennsylvania Avenue, Washington, D. C.

**FOLDING CAMP CHAIR**

Size folded, 3 feet long by 3 inches square. Weight, 6 pounds. Will support 300 pounds. Price, \$1.50.

**FOLDING CAMP TABLE**

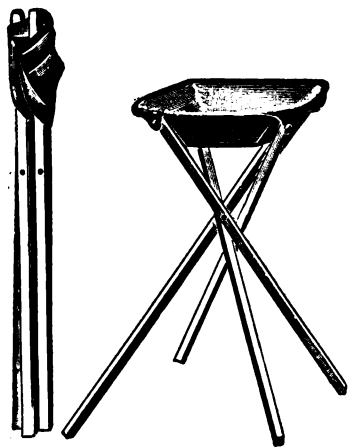
Top 2 feet 3 inches wide and 3 feet long. Size, folded, 3 feet long by 5 x 7 inches. Weight, 18 lbs. Will support 300 pounds. Price, \$3.30.



CAMP STOOL

Folds $2\frac{1}{2}$ inches square, 2 feet long; weight, 2 pounds. Will support 300 pounds.

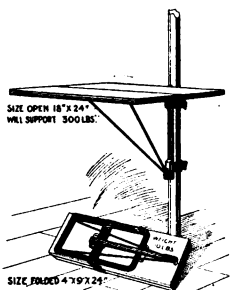
Price, 35 cts.



WASH STAND (Rubber Folding)

Folds 2 inches square, 3 feet long; weight, 2 pounds.

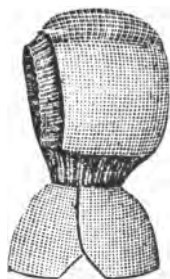
Price, \$1.



Attach to tent pole.

"SHUR-FOOT" FOLDING CAMP
TABLE

Price, \$2.



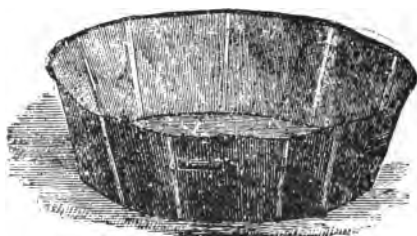
SLEEPING HOOD

Weight, 3 ounces.

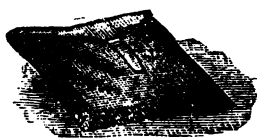
Price, \$1.50.

CHAPTER XIV

BATH TUBS



Open



Packed.

Rubber, Diameter, 16 inches. Price \$5.



Open

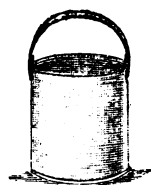


Folded, Double

Canvas, Diameter, 30 inches. Price, \$9.



Open



WATER PAIL, No. 1
3 gallons. Weight, 8 ounces.
Price, 50 cts.



Folded, Double

WASH BASIN, No. 1
Price, \$1.



Open



WASH BASIN, No. 2
Capacity, 1 gallon. Weight, 7 ounces.
Price, 50 cts.



Folded, Double
WATER PAIL, No. 2
6 quarts, \$1.
10 quarts, \$1.50



COMPASS, No. 1

Price, \$1.25 and \$1.50.



COMPASS, No. 2

Price, \$1.50.



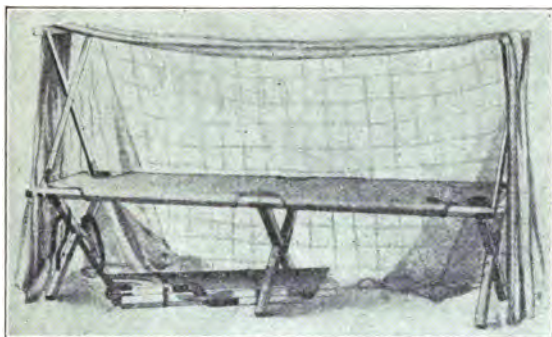
COMPASS, No. 3

Price, \$1.50.



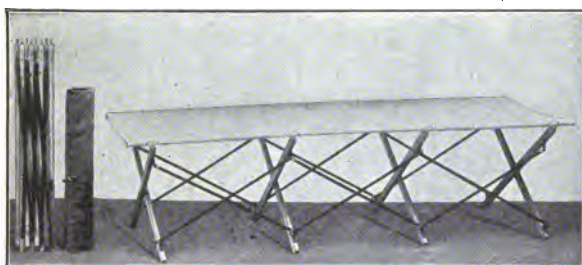
MATCH BOX

Price, 50 cts.



GOLD MEDAL COT

Cot alone (wt. 17 lbs.), \$3.50. With mosquito bar frame and mosquito bar, \$6.25.



Folded

Open

TELESCOPE COT

Weight, 16 lbs., Price, \$3.35.

CAMP CANDLESTICKS

Makes Two Candlesticks



Ready for Use.



Prepared for Closing.
Price, \$1 per Set.



Closed.



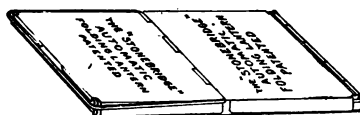
Opened, 11x15 inches.

MAP CASE

Price, \$2.



Open.



Folded.

FOLDING LANTERN

(Sides of mica. Will not blow out.)

Aluminum with steel frame, weight 9 oz., \$2.25.



No. 1.

Small lamp, weight, 4 oz., \$1.
Hand lamp, weight, 10 oz., \$2.
Carbide for same, $2\frac{1}{4}$ lbs., 25 cts.



No. 2.

Price, \$3.50; with dark lantern shutter, \$4.50.

ACETYLENE LAMPS



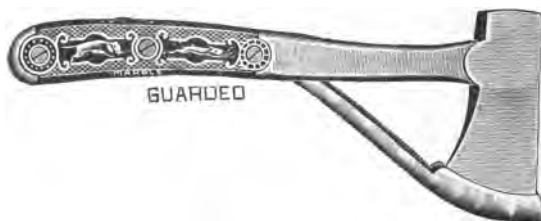
WATCH BRACELET

Price, 50 cts., 75 cts. and \$1, depending upon size of watch. (State diameter of watch when ordering).



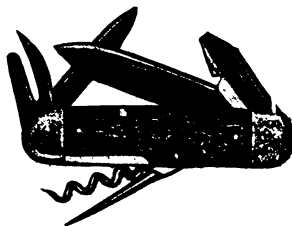
WEB TENT CLOTHES HANGER

Fits any size or shape pole....50 cts.



SAFETY AX

Price, \$1.50.



COMBINATION KNIFE

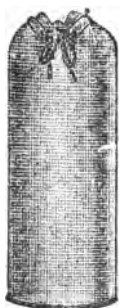
\$1.50.



CLOTHES HANGER

Each hanger has five hooks.

Price, 35 cts.



DUFFLE BAG

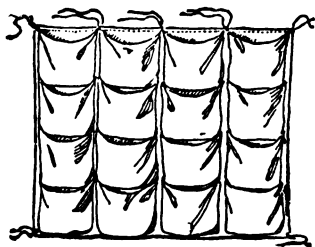
(Waterproof).

Order by Number	Diam.	Length.	Weight.	Price with Handles.
No. 1	9 ins.	24 ins.	2 lbs.	\$1.30
No. 2	12 ins.	36 ins.	2½ lbs.	1.80
No. 3	15 ins.	36 ins.	3½ lbs.	2.15
No. 4	18 ins.	36 ins.	4 lbs.	2.35
No. 5	21 ins.	36 ins.	4¾ lbs.	2.75



HOUSEWIFE

Price, 75 cts.



WALL POCKETS

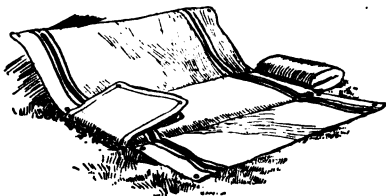
Price, \$1.50.



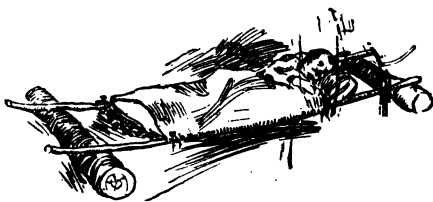
PRESTON MESS KIT

Consists of canteen, frying pan, stew pan, plate, knife, fork and spoon. Size $9\frac{1}{2} \times 6 \times 4$ inches. Price, \$6.

CAMP COMBINATION

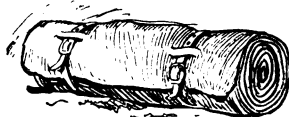


It is at the same time a Sleeping Bag, a Camp Bed, Mattress and Blanket, a Camp Hammock, and a Canvas Carry-all.



It is made of heavy 12 oz. Army Duck either lined or unlined. It is also made with a double bottom open at each end so it can be stuffed with any suitable dry substance as a mattress.

When used with a cot the Camp Combination is an ideal Camp Bed. It is unsurpassed as a Camp Hammock.



Price, \$6.

OTHER BOOKS BY THE SAME AUTHOR

Any of the books named can be gotten from—

The U. S. Infantry Association, Washington, D. C.,
The U. S. Cavalry Association, Fort Leavenworth, Kans.,
The Post Exchange, Fort Wm. McKinley, P. I.

Officers' Manual, 5th Edition, Revised and Enlarged. (Consists of Manual proper and Supplement). Price, \$2.50, postpaid. *The first book of its kind ever published*, being a handy, convenient compilation of "Customs of the Service" and other matters of a practical, worth-knowing nature.

PARTIAL TABLE OF CONTENTS:

Suggestions to Officers Just Appointed; How to Succeed in The Army; The Organization of The Army; The Militia of the United States; Relation of the Military to the Civil; The Post Adjutant; The Post Quartermaster; The Post Commissary; The Post Recruiting Officer; The Post Exchange Officer; The Post Prison Officer; Artillery District and Post Ordnance Officers; The Post Engineer Officer; The Post Signal Officer; The Company; Paper-Work in the Army; Discipline; Aides-de-Camp; Post Administration; "Customs of the Service;" Field Service; The Post Athletic Officer; The Post Range Officer; Officer in Command of the Machine Gun Platoon; The Summary Court; Inspector of Small-Arms Practice; The Surveying Officer; Military Attachés; The Educational System of the Army; Professional Study; Esprit de Corps; Employment of the Regular Army in Peace and War; The Use of the Army for Relief Purposes in Public Catastrophes; Riot Duty; Appointment, Promotion and Retirement of Officers; Model Proceedings of Boards, Model Forms of Depositions, etc.

Noncommissioned Officers' Manual. Price \$1.50, postpaid. *A liberal discount on lots of ten or more copies*. The SOUL of this book consists of the condensed and collated experiences of over fifty (50) old and experienced noncommissioned officers.

PARTIAL TABLE OF CONTENTS:

The Importance of the Position of Noncommissioned Officer; Discipline; The Usual Duties of All Noncommissioned Officers; Paper-